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Canadian Plant Disease Survey

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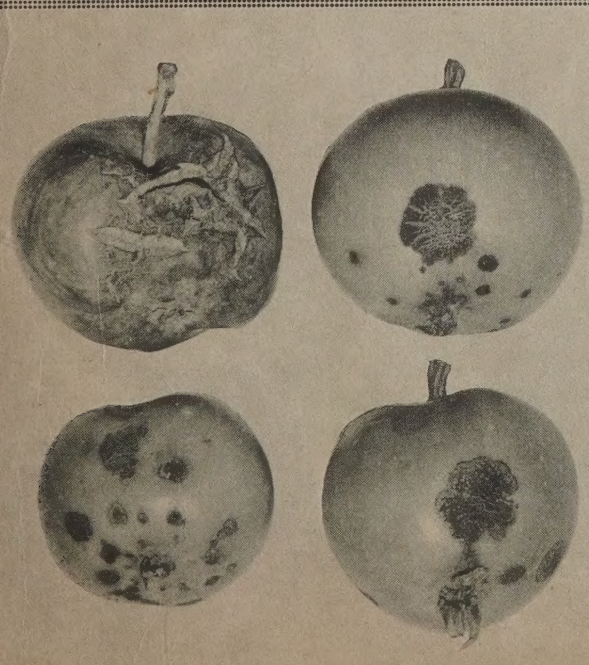

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CANADIAN PLANT DISEASE SURVEY

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D.W. CREELMAN.

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New and Noteworthy Diseases

Despite the presence of ample wind-borne inoculum, cereal rusts did not become epidemic in western Canada in 1960. Stem rust was virtually absent and leaf rust infections developed too late in the season to be of any significance. Crown rust of oats also appeared late. Septoria diseases of wheat and barley were much less serious than usual. Common root rots (Bipolaris sorokiniana, Fusarium spp.) were more serious and widespread than in 1959. Smuts were less common than usual in western Canada.

Stripe (Cephalosporium gramineum) was found to be widely distributed on winter wheat in Ontario and soil-borne mosaic, a virus disease, was severe and widespread in western Ontario. Downy mildew (Sclerophthora macrospora) was found on wheat in New Brunswick. This disease has not been previously reported in Canada.

Leaf blotch of oats (Drechslera avenacea) was common in the Atlantic Provinces whereas the Septoria disease (S. avenae f. sp. avenae) was less prominent than usual. The "black stem" phase of the latter disease was observed for the first time in Manitoba. Nematodes (Pratylenchus penetrans, P. minyus, Tylenchorhynchus claytoni) caused stunting of oats in western Ontario. Red leaf, a virus disease was commonly found in Manitoba, Quebec and New Brunswick.

Net blotch (Drechslera teres) was the most important leaf disease of barley in western Canada and spot blotch (Bipolaris sorokiniana) was quite common in the Maritime Provinces. Loose smut (Ustilago nuda) was severe on York Barley in Western Ontario.

Decline and phyllody, a virus disease of clover, continues to be of great importance on red, alsike, and ladino clovers in Quebec. Up to fifty per cent of the plants were affected in some fields. Downy mildew (Peronospora aestivalis) of alfalfa was prevalent in the northern parts of Alberta and British Columbia.

Individual diseases on forage legumes and herbage grasses in New Brunswick were, in themselves, not of great significance but their combined effects lowered both yield and quality of pastures and forage crops. A number of records of grass diseases, new to the Survey were recorded in 1960. Some are given below:

Dilophospora alopecuri on Agrostis and Festuca; Mastigosporium rubricosum on Agrostis and Calamagrostis; Ramularia pusilla and Septogloeum oxysporum on Agrostis; Passalora graminis on Anthoxanthum and Glyceria; Stagonospora bromi and Ustilago bullata on Bromus; Rhynchosporium orthosporum and Phyllosticta owensii on Dactylis; Fusarium poae on Festuca and Poa; Spermospora subulata on Festuca; Septoria avenae on Glyceria.

An outbreak of seedling blight (Rhizoctonia praticola) on flax was the worst on record in Saskatchewan but other flax diseases were of minor consequence. White rust (Albugo cruciferarum) and ring spot (Mycosphaerella brassicicola) were conspicuous on rape in the parkbelt region of the same

province. Stem canker (Diaporthe phaseolorum) was severe on the susceptible soybean variety Lincoln, and root and stalk rot (Phytophthora megasperma var sojae) was severe and widespread on the variety Harosoy in south-west Ontario. Crown gall (Agrobacterium tumefaciens) caused more damage than usual to sugar beets in Quebec.

Club root (Plasmodiophora brassicae) was less serious than usual on cruciferous crops in eastern Canada, probably because of the dry summer. Aster yellows was extremely severe on carrots and lettuce in the Maritime Provinces. Sclerotina rot (Sclerotinia sclerotiorum) caused field losses to cabbage, cauliflower and lettuce in the eastern provinces and symptoms of molybdenum deficiency in cruciferous crops were most pronounced in Newfoundland. The pin nematode (Xiphinema sp.) caused stunting of celery on muck soils in western Ontario.

Scab (Cladosporium cucumerinum) caused heavy losses to cucumbers in western Ontario, Quebec and New Brunswick and powdery mildew (Erysiphe communis) was prevalent on the same crop in Ontario. Wilt (Verticillium albo-atrum) rendered some eggplant crops unproductive in western Ontario. There was an unusually high incidence of anthracnose (Colletotrichum) lagenarium) on melons in the same area. Onion smut (Urocystis cepulae) was more serious in British Columbia and Manitoba than in recent years. Pea root rot, caused by various pathogens, is becoming more prevalent in canning crops in eastern Ontario. Pepper crops in western Ontario were heavily infested by the spiral nematode (Helicotylenchus erythrinae).

Late blight (Phytophthora infestans) was virtually absent in both the commercial potato and tomato crops in 1960. Botrytis cinerea was found causing a storage rot of potatoes in New Brunswick. The incidence of bacterial ring rot (Corynebacterium sepedonicum was considerably lower than in 1959 but it is still an important disease in Quebec and New Brunswick. Black leg (Erwinia atroseptica) continues to present a problem to potato growers in Alberta and Prince Edward Island. Dry rot (Fusarium spp.) caused heavy losses in seed and table stock potatoes in Prince Edward Island. Rhizoctonia (Pellicularia filamentosa) caused losses in British Columbia and Quebec. Leaf roll and mosaic, both virus diseases, were more serious in eastern Canada than in recent years and leaf roll continued to be serious on Netted Gem in British Columbia. Spindle tuber, another virus disease, increased in prevalence in Saskatchewan and in the Maritime Provinces.

Early blight (Alternaria solani) was severe on tomatoes in most parts of Canada, particularly in eastern Ontario and Nova Scotia. Leaf mold (Cladosporium fulvum) also caused losses in both greenhouse and field crops. Infections of anthracnose (Colletotrichum coccodes) were very light in canning tomato crops in western Ontario. Wilts (Verticillium dahliae, V. albo-atrum) caused losses in British Columbia, western Ontario and Nova Scotia. Bacterial spot (Xanthomonas vesicatoria) was serious in canning crops in Ontario. Mosaic reduced yields in Ontario and Nova Scotia. Blossom-end rot was unusually prevalent in all parts of the country.

Verticillium wilt (V. albo-atrum) was quite prevalent on both woody and herbaceous ornamentals in south-west Ontario. Rust (Melampsoridium betularum) caused extensive damage to Betula alba var. pendula in a British Columbia nursery. Phytophthora lateralis continued to be destructive on Lawson's cypress on the west coast and anthracnose (Marssonina daphnes) caused almost complete defoliation of Daphne on Vancouver Island. A leaf and twig blight caused by an undetermined species of Ascochyta was severe on Lonicera at Fredericton, N.B. Some Malling and Malling Merton rootstocks, used for propagating ornamental Malus spp. in a nursery in British Columbia, were shown to be virus-infected. Anthracnose (Gnomonia veneta was severe and widespread on Platanus in the coastal areas of British Columbia and occurred locally in Ontario. Rust (Phragmidium spp.) was prevalent on roses in localized areas in Manitoba, Ontario, Nova Scotia and Prince Edward Island. Willow blight (Fusicladium saliciperdum) was very heavy in Quebec and the Maritime Provinces. Bacterial blight of lilacs (Pseudomonas syringae) was destructive at Fredericton, New Brunswick.

Aster yellows (Callistephus virus 1) was widespread in Nova Scotia on Calendula, Callistephus, Celosia, Linaria, Matricaria, Matthiola, Nigella, Paeonia, Phlox, Tagetes, Tropaeolum and Zinnia. Powdery mildew (Erysiphe communis) was exceptionally severe on Aster in eastern Quebec. Foliar nematode (Aphelenchoides olesistus) caused damage to Begonia in Ontario. The nematodes Paratylenchus projectus and Pratylenchus penetrans caused stunting of Chrysanthemum, both in the greenhouse and in the field in western Ontario. Virus stunt was very prevalent in several chrysanthemum varieties in Ontario. Alternaria blight was severe on Dianthus spp. in Alberta, Ontario, Quebec and New Brunswick. Dry rot (Stromatinia gladioli) was prevalent in commercial Gladiolus plantings in western Ontario and in Nova Scotia. Bacterial leaf spot (Bacterium tardicrescens) was reported on Iris from New Brunswick. Root-knot nematodes (Meloidogyne spp.) caused damage to Impatiens, Saintpaulia, Salvia and Zinnia at various centers. Phytophthora cryptogea caused a wilt and stem rot of Tagetes and Zinnia in western Ontario and Sclerotium tuliparum was severe in an Ontario garden. Crown rot of Viola (Centrospora acerina) was again extremely severe in commercial pansy plantings in Nova Scotia. Downy mildew (Peronospora grisea) was reported in Veronica in New Brunswick. This is the first report to the Survey.

The Weather and its Influence on Plant Disease

The winter of 1959-60 in the coastal areas of B.C. was again moderate with a minimum temperature at the seacoast of 19°F. Snowfall in January and March was above normal, but no snow fell in February. Cool, wet conditions developed in the last week of March and continued, almost without interruption, throughout April and May. This condition may have been responsible for an unusually large amount of potato seed-piece decay and planting of many crops was seriously delayed. The last spring frost was recorded on 19 March.

June was cooler than usual but rainfall was much below normal and drought conditions prevailed through July and August. Wet weather in September was responsible for the appearance of some late blight in commercial potato fields. Wet conditions prevailed throughout October and the first killing frost was experienced on 2 November (H.N.W. Toms, N.W. Mayers).

The winter in the B.C. Interior was abnormally dry and temperatures fell below 10°F only once. This three-day period, however, was in mid-November and caused minor losses of buds of cherries and Delicious apples and serious injury to a number of strawberry plantings in the Shuswap and Kootenay districts.

In the period 19 Nov., 1959 to 18 Nov., 1960 the total precipitation at Summerland was only 6.85 in., well below the 39-year average of 10.92 in. Unusually high day-time temperatures in March and early April were followed by dangerously cold weather in late April and during several periods in May. In several districts a small proportion of cherry, prune and apple fruit buds were injured.

Total heat units between bloom and harvest at Summerland were the third highest in 18 years despite 2 periods, 11-31 May and 21 Aug.-10 Sept. in which heat units were half the long-term average. The month of July broke all records for heat units, hours of sunshine and lack of rainfall.

In the Okanagan Valley one minimal apple scab infection period occurred 20-22 May. By mid-June there were fairly general, but mild, leaf and fruit infections throughout the northern part of the Valley and in scattered orchards in the southern districts. In the Kootenays a possible infection period was recorded on 5-6 May and longer infection periods occurred later in the month. Unsprayed orchards developed a high percentage of scab.

Powdery mildew of apples was more severe than in any recent season. It has been increasing steadily since 1955-56, following a succession of relatively mild winters. Fire blight was at a very low level and low temperatures during the bloom period prevented blossom infection. Cool, wet weather during bloom in the Kootenays resulted in heavy infections of brown rot blossom blight in cherries. Conditions were dry before harvest, however, and little fruit rot developed.

Coryneum blight was unusually severe on peach and apricot fruits in the Kootenays and the Okanagan Valley. Several light rains shortly after bloom sufficed to provide fruit infection conditions. Dry weather during the

apple harvest period appeared to have reduced the incidence of bull's-eye rot. Damp weather at peach harvest, on the other hand, contributed to a high incidence of Rhizopus rot in that crop.

There was additional evidence that cool weather in the early part of the season favors symptom expression of apple virus diseases. Leaf pucker symptoms were especially severe on leaves that opened during cool periods. Ring russetting and fruit distortion symptoms were more severe than in any season since these diseases were first observed.

The cool, early season temperatures favored the development of onion smut, although most of the increase can be attributed to spreading infection of soils. Although conditions were favorable for Verticillium wilt of tomatoes, little of the disease developed (M.F. Welsh).

A cool, wet May in northern Alberta favored the development of ergot ascocarps and the infection of early-heading grasses. However, by early July the weather turned hot and remained that way during the flowering of cereals and ergot incidence in these crops was low. The high temperatures seemed to have curtailed scald infections in most areas but favored net blotch to the point where this disease became the most important one on barley. Warm, damp weather in August permitted early blight of potato and tomato to become quite prevalent. Moist conditions early in the season also favored the development of downy mildew of alfalfa (W.P. Campbell). Dry and hot conditions during the summer months in the Lethbridge area were unfavorable for plant disease development, particularly foliage diseases (J.B. Lebeau).

Weather conditions in Saskatchewan in May and June permitted the early development of leaf spotting diseases but continuing dry weather in July and August prevented their further development. As a result of the dry weather, most crops matured quickly and were relatively free of disease. Light showers and frequent dews in the north-east part of the province encouraged leaf spot diseases. Common root rots of cereals were increased by the dry weather (H.W. Mead).

Spring in Manitoba began with abundant soil moisture derived from the heavy rainfall of the autumn of 1959. Seeding began late and was further delayed by a snowfall on 25-26 April, but it became general in early May and emergence and early growth of cereals were generally good. Warm, sunny weather arrived late in June and continued into August, resulting in rapid plant growth. High temperatures in July caused a drain on moisture reserves but moderate to heavy rains in early August made possible an average grain crop which was largely harvested by mid-September.

Late seeding and the lushness of early cereal growth appeared to expose the crop to the threat of rust infection, especially in view of the considerable leaf rust and stem rust infection in eastern Kansas and Nebraska in June. Heavy spore showers of both rusts occurred over Manitoba on 24-27 June. However, the warm, dry weather of July prevented any considerable infection. Stem rust infection broke out on susceptible varieties of barley and oats following the rains of early August, but too late in the season to cause appreciable damage.

The same weather factors that prevented the development of severe rust infection also militated against the spread of mildews of cereals, of which only trace infection was found on barley. It is probable that the lightness of Septoria infection on wheat and barley was due to the same causes. The development of net blotch on barley, which was light to moderate in southern Manitoba but moderate to severe in the north-west areas, was less affected by the July drought.

The occurrence of yellow dwarf of barley and red leaf of oats was related to the development of aphid infestations which, in turn, were influenced by weather conditions. Lush growth, particularly of barley in May and June, combined with above normal temperature and humidity, encouraged aphid infestation which continued well into July but was eventually checked by the hot, dry weather. Yellow dwarf of barley was reported in several places in July but it did not appear to spread after the effect of the drought became manifest.

An unusual occurrence was the development of what farmers called "green rust" on standing and swathed grain after the rainfalls in early August. The condition was caused by the abundant growth of Cladosporium and Alternaria which were favored by ample moisture and premature ripening of the plants by hot weather leaving a considerable amount of untranslocated carbohydrates in leaves and stems and thereby creating a favorable substrate for fungus growth (T. Johnson).

The amount of sunshine recorded in southwestern Ontario in January, February and March was only 60% of the 40-year average. Reduced sunshine caused poor setting of tomatoes on the first trusses of the greenhouse crop and resulted in a below average yield in many cucumber crops.

A prolonged period of cool weather without sunshine resulted in heavy losses of cucumbers and melon plants set under paper in the Harrow-Leamington area. Reduction in stands caused by Pythium root rot varied from 10-95%. Many fields were reset and others planted to other crops. Scab reached serious proportions on Burpee hybrid field-grown cucumbers by mid-July. Minimum ground temperatures in the low fifties were recorded on consecutive nights from 4-10 July. These low temperatures predispose cucumbers to attack by scab.

Verticillium wilt was epidemic in 1960. It was found affecting all the usual susceptible woody and herbaceous hosts. Environmental conditions conducive to Verticillium wilt epidemics, as reported by McKeen, Can. J. Res. 21:95-117. 1943 appear to have been met during the late spring and early summer. Dry weather set in after 8 August and favored the harvesting of one of the largest tomato crops on record in Essex and Kent counties. Fruit cracking was virtually non-existent and anthracnose and foliage diseases were easily controlled (C.D. McKeen).

The 1960 season in the Niagara Peninsula, Ontario was featured by wet weather in May and June and hot, dry conditions in August and September. Rainfall was excessive in May and there were five apple scab infection periods. Primary infections were observed on 17 May and were quite general by 24 May. Rain on 30-31 May resulted in much spread of scab and by 20 June unsprayed

trees were heavily infected. Another important scab infection period occurred 14-17 June. Showery weather of 7-13 May seriously affected the set of sweet cherries and favored the development of brown rot on the green fruit. This infection was unusually prevalent and destructive. Another showery period on 16-18 May with maximum temperatures above 70°F in the latter part of the pear bloom period provided conditions for the development of fire blight. Infected spurs were observed on 7 June and spread of infection occurred with the rains of 14-17 June. Pear scab was serious in several orchards of Bartlett and Flemish Beauty at this time. The same period of rain was important in the development of cherry leaf spot which became a serious factor in many orchards early in July. The excessive soil moisture in May resulted in a poor condition of peach foliage and there were instances of collar rot of apple and pear trees in poorly drained locations. The June rains also provided particularly favorable conditions for downy mildew of grapes as they occurred before protective sprays were applied. Wet soil conditions also interfered with spray practices and the mildew continued to be a threat throught the season.

Dry weather, high temperatures, heavy dews and continued high relative humidity in late August and September favored a widespread outbreak of powdery mildew on grapes. The dry weather permitted the harvest of stone fruits with a minimum of brown rot and of the apple crop without exposure to late-season scab infections. The apple crop suffered some damage in a hail storm on 19 June (G.C. Chamberlain).

The summer was dry in the lower St. Lawrence region. Only in June was precipitation near normal and abundant rains early in the month accelerated the development of all crops and favored the initiation of apple scab which was well established by the end of the month. Willow blight was also quite prevalent by the end of June.

Dry weather in July and August slowed the development of foliage diseases but promoted disorders such as blossom-end rot of tomatoes. Cucumber scab began to develop but was checked by the onset of drought (L.J. Coulombe).

The mean temperature during May at Fredericton, New Brunswick was the highest on record and the precipitation was well above the 47-year average. The first ascospore discharge of the apple scab organism took place 10 May and continued until 14 May. Many orchards were infected but drier weather in June minimized the threat. Temperatures in June were also above average and with the drier weather seedling disorders of the wire stem type were noted in peppers and broccolii.

July temperatures were below average but precipitation was above normal. Late blight was first reported on 10 July but with the onset of drier weather in August it did not progress from the foci of July infections. July weather conditions were also favorable for the development of cucumber scab and severe outbreaks occurred in the Fredericton area.

September was both warmer and drier than normal. Early blight of both potato and tomato and Alternaria leaf blight of cucumber were unusually severe in the Fredericton area. Leaf hopper damage to unsprayed potato plots

was excessive and aster yellows developed in carrots. Movement of aphids was apparently also excessive during the summer and many solanaceous ornamentals were found to be infected with potato virus Y. Dry weather during the late growing season resulted in a virtual absence of late blight tuber rot in potatoes (K.M. Graham, S.F. Clarkson, J. Munro).

Apple scab infection periods in Nova Scotia in May and June were fairly numerous but July and August were very dry and scab infections were easy to control. No late scab was found (R.G. Ross). The July-September season of 1960 was the second driest on record in Prince Edward Island. Although late blight was first recorded on potatoes on 14 July, it failed to develop beyond a few trace infections. Exceptionally high fall temperatures were, in part, responsible for a serious incidence of Fusarium dry rot in potatoes in Prince Edward Island (L.C. Callbeck).

Phenological Data at Ottawa, Ontario - 1960

Species	No. of years of observation	First dates of anthesis, 1960	No. of days departure from average
Alnus rugosa	9	14/4	7L
Acer saccharinum	25	17/4	6L
Corylus cornuta	8	17/4	1L
Populus tremuloides	20	22/4	6L
Poa annua	9	28/4	2L
Populus grandidentata	9	29/4	5L
Ulmus americana	25	1/5	5L
Acer rubrum	9	1/5	5L
Betula papyrifera	9	3/5	1L
Acer negundo	20	3/5	2E
Acer saccharum	25	8/5	1E
Prunus pensylvanica	19	11/5	2E
Barbarea vulgaris	9	12/5	2E
Fagus grandiflora	8	12/5	3E
Fraxinus americana	8	12/5	N
Alopecurus pratensis	9	13/5	1E
Smilacina stellata	19	17/5	3E
Quercus macrocarpa	9	17/5	5E
Pinus sylvestris	25	20/5	7E
Poa pratensis	9	29/5	1L
Juglans nigra	9	29/5	9E
Dactylis glomerata	9	3/6	6E
Bromus inermis	19	12/6	7E
Carya cordiformis	16	14/6	2L
Sambucus nigra	11	18/6	2L
Phleum pratense	19	25/6	N
Rhus typhina	14	27/6	1L
Tilia americana	19	30/6	6E
Catalpa ovata	17	3/7	1L
Cephalanthus occidentalis	15	13/7	5E
Ambrosia trifida	9	23/7	10L
Cassia hebecarpa	14	29/7	5E
Ambrosia artemisiifolia	8	3/8	4E
Hamamelis virginiana	17	6/9	13E

Phenological Data at Winnipeg, Saskatoon and Edmonton, 1960.

	Winnipeg		Saskatoon		Edmonton	
Pulsatilla ludoviciana	--	--	20/4	2L	18/4	7E
Corylus rostrata	--	--	--	--	19/4	8E
Populus tremuloides	23/4	1E	30/4	5L	22/4	4E
Phlox hoodii	--	--	5/5	6L	--	--
Acer negundo	12/5	5L	9/5	2L	4/5	1L
Salix petiolaris	--	--	--	--	20/4	10E
Shepherdia canadensis	--	--	--	--	5/5	2L
Betula papyrifera	--	--	12/5	1L	3/5	4E
Prunus americana	17/5	3L	--	--	--	--
Amelanchier alnifolia	19/5	1L	21/5	7L	17/5	1L
Prunus pensylvanica	--	--	30/5	10L	20/5	2L
Viola rugulosa	--	--	31/5	10L	29/5	6L
Smilacina stellata	--	--	31/5	6L	25/5	1E
Crataegus chrysocarpa	26/5	3L	--	--	5/6	6L
Prunus melanocarpa	27/5	2L	31/5	3L	3/6	6L
Cornus stolonifera	28/5	4E	4/6	5L	9/6	8L
Viburnum lentago	1/6	2E	--	--	--	--
Elaeagnus commutata	--	--	6/6	2L	9/6	4L
Lonicera glaucescens	--	--	8/6	N	10/6	3L
Hedysarum americanum	--	--	9/6	2L	--	--
Thalictrum turneri	--	--	--	--	12/6	7L
Maianthemum canadense	--	--	--	--	12/6	6L
Achillea lanulosa	--	--	13/6	3L	--	--
Anemone canadensis	7/6	1L	13/6	2L	22/6	1E
Viburnum opulus	10/6	1L	--	--	--	--
Viburnum pubescens	11/6	1L	--	--	--	--
Galium boreale	--	--	14/6	N	22/6	N
Rosa alcea	--	--	21/6	1L	14/6	4L
Campanula petiolata	--	--	23/6	1L	15/7	4L
Bromus inermis	--	--	29/6	5L	8/7	11L
Zizia aurea	--	--	--	--	--	--
Spiraea alba	--	--	30/6	N	--	--
Symphoricarpos occidentalis	26/6	1E	30/6	3E	11/7	6L
Chamaenerion spicatum	--	--	--	--	13/7	4L
Lactuca pulchella	--	--	12/7	3L	--	--
Psoralidium argophyllum	--	--	14/7	3L	--	--
Phleum pratense	--	--	--	--	15/7	7L
Apocynum androsaemifolium	--	--	--	--	10/7	5L
Solidago missouriensis	--	--	12/7	3E	--	--
Solidago canadensis	--	--	--	--	17/7	4E
Grindelia perennis	--	--	28/7	5L	--	--
Oligoneuron canescens	--	--	26/7	1L	--	--
Aster conspicuus	--	--	--	--	20/7	4E
Aster laevis	--	--	1/8	3L	29/7	1E

Wheat records

	Winnipeg		Saskatoon		Edmonton	
Wheat sown	9/5	10L	27/4	3E	16/5	14L
emerged	16/5	5L	12/5	1E	29/5	17L
headed	2/7	1L	1/7	4E	20/7	10L

I. DISEASES OF CEREAL CROPS

WHEAT

LEAF SPOT (Ascochyta sorghi). Infection was 1-tr./14 spring wheat fields in s. Alta. (J.S. Horricks). It was present in abundance on Chinook wheat at the Exp. Farm, Swift Current, Sask. where it has been found annually since 1957 (B.J. Sallans). Collections from Swift Current were examined and although the conidial measurements varied somewhat from those given on other hosts by Sprague, (Diseases of Cereals and Grasses in North America, 1950), the organism is assigned for the present, at least, to A. sorghi (D.W. Creelman).

COMMON ROOT ROT (Bipolaris sorokiniana, Fusarium spp.) was 23-tr. 13-sl. 1-sev./75 fields surveyed in c.- and n. Alta. (W.P. Campbell). Ratings in s. Alta. were 9-tr. 3-sl. 2-mod./14 spring wheat, and 10-tr. 11-sl. 6-mod. 3-sev./31 winter wheat fields (J.S.H.). Common root rot was more prevalent in Sask. than in 1959. Only in crop district 7 was it lighter. Average disease ratings for crop districts 1-3 and 5-9 were 11.84, 10.91, 13.34, 10.62, 10.33, 9.37, 5.87, and 9.29 respectively. The average rating for the province was 10.64, compared with 9.14 in 1959 (B.J.S.).

SMUDGE (Bipolaris sorokiniana, Alternaris tenuis) was reported to be more conspicuous in n.-w. Sask. than in recent years. Both organisms were isolated from specimens received (T.C. Vanterpool).

STRIPE (Cephalosporium gramineum) was found on winter wheat in Peel, York, Simcoe, Carleton and Renfrew counties, Ont. and seen in other locations for which no record was kept. Only a few diseased plants were found in the more vigorously growing fields but the disease was quite common in unthrifty, weedy fields. In 2 fields, 15-20% of the plants were affected (J.T. Slykhuis).

MOLDS (Cladosporium herbarum, Alternaria tenuis) were found on several varieties in plots at Fredericton, N.B. (G.B. Orlob, R.H.E. Bradley) (C.P.D.S. 40:2. 96. 1960).

ERGOT (Claviceps purpurea) was tr. in 2/171 fields in Sask. (B.J.S.), and tr. on winter wheat at Lawrencetown, N.S. (D.W.C.).

MOLD (Epicoccum nigrum) was found on leaves of winter wheat at Harrow, Ont. (W.E. Sackston) (C.P.D.S. 40:1, 44. 1960).

POWDERY MILDEW (Erysiphe graminis). Slight infections were seen on Ridit winter wheat at U.B.C., Vancouver, B.C. (H.N.W. Toms). Ratings on spring wheat in s. Alta. were 8-tr. 1-sl. 1-sev./14. The sev. infection was at Ardenville (J.S.H.).

HEAD BLIGHT (Fusarium spp.) was 1-tr./171 fields in Sask. (B.J.S.).

TAKE-ALL (Ophiobolus graminis). Ratings in c. Alta. were 4-tr. 1-sl. 1-sev./75 fields examined (W.P.C.).

STEM RUST (Puccinia graminis) was 7-tr. 1-sl./14 spring wheat and 1-tr./22 winter wheat fields in s. Alta. (J.S.H.). Traces were observed at Saskatoon but no stem rust was seen in the general survey of the province (B.J.S.). Infection was 1% in some plots at Fredericton, N.B. (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 96. 1960).

LEAF RUST (Puccinia recondita). Ratings in e.-c. Alta. were 8-tr. 2-sl./75 fields. It was rated 6-tr./14 spring wheat fields in s. Alta. (J.S.H.). It was 39-tr. 21-sl. 18-mod. 6-sev./162 fields surveyed in Sask. Very little rust was found in areas of pronounced drought (B.J.S.). Infection in plots of Thatcher at London, Ont. increased from 1% on 6 July to 90% on 25 July. All leaves were dead by 5 Aug. (F.R. Forsyth). Leaf rust was 40% in nurseries, principally on winter wheat, at Fredericton, N.B. Little was observed in farmers' fields (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 96. 1960). Infection was tr.-mod., depending on variety, at Nappan, N.S. (R.V. Clark). It was tr. on Red Bobs, sl. on Marquis, mod. on Thatcher, and sev. on Canthatch in nurseries at Charlottetown, P.E.I. (J.E. Campbell). Winter wheat in plots at St. John's West, Nfld. was heavily infected (D.W.C.).

DOWNY MILDEW (Sclerophthora macrospora). A 1% infection was found in a field in Victoria Co., N.B. (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 96. 1960). This disease of cereals has not been previously reported to the Survey. The identity of the fungus was confirmed by J.A. Parmelee and D.B.O. Savile (D.W.C.).

GLUME BLOTCH (Septoria nodorum) was 4-tr. in c. Alta. (W.P.C.). A specimen was received from the Pas, Man. (W.A.F. Hagborg). It was prevalent along the eastern shore of N.B. and was found in 2 fields in Victoria Co. (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 96. 1960).

LEAF BLOTCH (Septoria tritici). Ratings in c. Alta. were 5-tr. 9-sl. 1-mod/75 fields (W.P.C.).

SPECKLED LEAF BLOTCH (Septoria spp.) was 1-tr./14 spring wheat fields in s. Alta. (J.S.H.). Trace infections were found at Lipton, Raymore, Copeland and Floral in Sask. out of 171 fields surveyed (B.J.S.). Infection was sl.-mod. at Nappan, N.S. (R.V.C.).

COMMON BUNT (Tilletia caries, T. foetida) was 4-tr./22 s. Alta. winter wheat fields. Two infections of each species were found (J.S.H.). No bunt was found in 133 fields surveyed in Sask. (R.C. Russell).

DWARF BUNT (Tilletia contraversa). Infection was 2-tr./22 winter wheat fields in s. Alta. (J.S.H.). Specimens were received at Ottawa from an undisclosed area in Ont. (I.L. Connors).

LOOSE SMUT (Ustilago tritici) was 1-tr./133 fields in Sask. This incidence is much below the normal (R.C.R.).

BACTERIAL BLACK CHAFF (Xanthomonas translucens). Slight leaf infections developed in several fields of Pembina in Man. but no infection was seen on Selkirk (W.A.F.H.).

SOIL-BORNE MOSAIC (virus). Nineteen /43 fields examined in Essex, Kent, Huron, Wellington, Peel, York and Simcoe counties in w. Ont. were infected. Infection was 100% in 6 fields, but normally only a few infected plants were found in patches in the field. This disease has not been previously known in Ont. (J.T.S.). (C.P.D.S. 40:1, 43. 1960).

YELLOW DWARF (virus) was present in nurseries at Fredericton and at other localities in N.B. (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 96. 1960).

HEAD DISCOLORATION (various organisms) was 9-tr./15 fields of Pembina wheat in s. Man. (W.A.F.H.).

LEAF FLECKING (physiological) was tr.-mod. in several fields of hard red spring wheat in the Peace River district of Alta. (W.P.C.).

LEAF BLOTCH (physiological). This disease, sometimes conspicuous on the variety Golden Ball, was sl. at Revenue, Swift Current and Saskatoon, Sask. (B.J.S.).

CHEMICAL INJURY. Injury from 2, 4-D caused root distortion and dull, shrivelled grain at Cavalier and Longbank, Sask. (T.C.V.).

DROUGHT INJURY. Badly shrivelled kernels due to poor filling were commonly observed at Carlyle, Estevan, Weyburn, Assinaboia, Loreburn, Biggar, Plato and Rosetown, Sask. (B.J.S.).

OATS

SEEDLING BLIGHT (Bipolaris sorokiniana). Considerable seedling blight occurred on some late-seeded Fundy oats at Fredericton, N.B. (R.V. Clark).

COMMON ROT ROT (Bipolaris sorokiniana, Fusarium spp.) was 1-tr./16 fields in s. Alta. (J.S. Horricks), and 3-tr. 1-sl./32 in c. Alta. (W.P. Campbell).

ANTHRACNOSE (Colletotrichum graminicola) was sev. on all 16 test varieties, particularly Q.O. 1.2, Q.O. 1.6 and Fundy at St. Charles de Caplan, Que. It was also tr. on Shefford at Thetford Mines (D. Leblond). Infection was 5% in a field in Westmorland Co., N.B. (G.B. Orlob, R.H.E. Bradley) (C.P.D.S. 40:2. 94. 1960).

LEAF BLOTCH (Drechslera avenacea) was 1-tr./16 s. Alta. fields (J.S.H.). Infection averaged 10% and ranged from tr.-80% in N.B. fields early in July. Later in the season infections of 100% were common (G.B.O. R.H.E.B.) (C.P.D.S. 40:2. 93. 1960). It was mod.-sev. on all varieties at Nappan (R.V.C.) and sl.-mod in 4/4 fields in the Berwick, N.S. district (D.W.C.). Moderate-sev. infections were found in all plots and fields examined in P.E.I. where it was much heavier than in previous years. (R.V.C.). It was mod.-sev. in plots and commercial fields at St. John's West and Colinet, Nfld. (D.W. Creelman, O.A. Olsen).

POWDERY MILDEW (Erysiphe graminis) was sl.-sev. on Victory and tr. on Eagle in plots at U.B.C., Vancouver, B.C. (H.N.W. Toms).

BROWN STRIPE (Passalora graminis) was tr. in 1 field nr. Fredericton, N.B. (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 94. 1960). This is the first report, to the Survey, of this organism on oats (D.W.C.).

NEMATODES. A field of stunted oats nr. Thamesville, Ont. contained high populations of Pratylenchus penetrans and P. minyus as well as the stunt nematode, Tylenchorhynchus claytoni (W.B. Mountain, R.M. Sayre).

HALO BLIGHT (Pseudomonas coronofaciens) was 6-tr. 1-sl./7 fields in c. Alta. (W.P.C.). A tr. of infection occurred at Winnipeg, Man. early in the season but failed to develop (W.A.F. Hagborg). Infection was 25% at Fredericton and 15% in a field at Chatham, N.B. (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 93. 1960). Slight amounts were seen in 1/4 fields in the Berwick, N.S. district (R.G. Ross, D.W.C.).

CROWN RUST (Puccinia coronata) was mod.-sev. on Ajax, Glen, Shefford and M.C. 6846 in Quebec Seed Board plots at Ste. Anne de la Pocatiere and Riviere Ouelle, Que. (D.L.). By mid-Aug. most fields in e.- and c. N.B. were infected. Only a few fields were infected in w. N.B. (G.B.O., R.H.E.B.) C.P.D.S. 40:2. 94. 1960). It was extremely heavy on Erban at Pokiok, N.B. (S.R. Colpitts). It was tr.-sl. throughout P.E.I. (J.E. Campbell); was tr. at Nappan (R.V.C.), and 1-sev./4 fields at Berwick, N.S. (D.W.C.).

STEM RUST (Puccinia graminis) was sl. on Eagle nr. Abbotsford and tr. on 20% of the plants of the same variety in plots at Vancouver, B.C. (H.N.W.T.). It was mod.-sev. in Quebec Seed Board plots at Riviere Ouelle, Thetford Mines and St. Hyacinthe, Que. (D.L.). Stem rust was scarce in farmers' fields in N.B. but was abundant in a late-planted experimental plot at Fredericton (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 94. 1960). (S.R.C.).

It was tr.-sl. in most P.E.I. fields and was sev. in 1 field (R.V.C.). Clinton was the only variety affected in nurseries at Charlottetown, P.E.I. (J.E.C.). It was tr. at Nappan, N.S. (R.V.C.).

SPECKLED LEAF BLOTCH (Septoria avenae f. sp. avenae). Infection was 4-tr./32 c. Alta. fields (W.P.C.), and 2-tr./16 in s. Alta. (J.S.H.). It was found in 10/18 fields examined in Man. in tr.-sl. amounts. Traces of the disease have frequently been reported from Man. but the "black stem" symptoms observed this year at Morden and Keyes appear not to have been previously reported from the province (G.J. Green). Infection in N.B. was rated 4-tr.-sl. 4-mod. 12-sev./20 fields. Individual plants showed 10-30% infection (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 94. 1960). Speckled leaf blotch and stem break were quite general throughout P.E.I. but the intensity was not as sev. as in recent years. Slight-mod. infections were seen in all 7 fields examined between Borden and Charlottetown (J.E.C., R.V.C., D.W.C.). Infection was sev. on most varieties, especially late-planted material, at Nappan (R.V.C.) and was rated 4-mod. 7-sl. 1-tr./12 fields examined in the Annapolis Valley, N.S. (D.W.C.). It was sl. in fields and plots at St. John's West, Nfld. (D.W.C.).

SMUTS (Ustilago avenae, U. kolleri) were 1-tr./16 fields in s. Alta. (J.S.H.) and were unusually scarce in Sask. (R.C.R.). Trace amounts were seen in 30% of N.B. fields examined and 1 field nr. Hartland showed 1-5% (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 94. 1960). One /4 fields in the Berwick, N.S. area was 2% infected (D.W.C., R.G.R.). Smuts were more prevalent in P.E.I. than in the past few years (J.E.C.).

RED LEAF (virus) was 1-sl. and 1-sev./16 s. Alta. fields, the sev. infection being at Duchess (J.S.H.). It was rated 3-tr. 1-2%. 1-10%. 1-30%. 3-40%. 1-95% between Sprague and Brandon, (H.A.H. Wallace) (C.P.D.S. 40:2. 63. 1960), and was mod. in plots at Morden, Man. (W.A.F.H.). Infection was sev. in late oats in Kamouraska Co., Que. but did little apparent damage (R.O. Lachance). Red leaf was found in all 76 fields surveyed in N.B. in late July. It was mod.-sev. in plots at Fredericton but mostly a trace in farmers' fields (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 93. 1960). Infection was tr.-sl. at Nappan, N.S. and in P.E.I. (R.V.C.).

BLAST (physiological) was rated 8-tr. 3-sl. 3-mod. 1-sev. in c.- and n. Alta. (W.P.C.), and 4-tr. 5-sl. 1-mod./16 in s. Alta. (J.S.H.). It was 3-tr. 3-sl./12 Sask. fields (B.J.S.), and tr.-1% in many N.B. fields with one 30% occurrence in Charlotte Co. (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 93. 1960). It was 4-sl./4 fields in the vicinity of Berwick, N.S. (D.W.C., R.G.R.). Two fields at St. John's West, Nfld. were sl. affected (D.W.C.).

GRAY SPECK (Manganese deficiency) was rated as 7-tr. 6-sl. 2-sev. in n.- and c. Alta. (W.P.C.), and 3-sl. 1-mod. 2-sev. in s. Alta. where it was found on the black organic soils of the foothills region. Ajax, a variety tolerant to this disorder, developed sev. symptoms when grown on one of

these manganese-deficient soils in the greenhouse (J.S.H.). It was 2 mod. /4 fields in the Berwick, N.S. district (D.W.C., R.G.R.).

LEAF SPOT (physiological). This condition was found only in plots and only on certain hybrids at Charlottetown, P.E.I. Similar symptoms were prominent in plots at Ottawa. The condition is thought to be caused by a sudden change in moisture and temperature conditions (R.V.C.).

LODGING. A form of lodging, distinct from that usually encountered in Garry oats was encountered at Zealandia, Sask. Up to 90% of the stems were broken over 4-8 inches above soil level. Drought was sev. in the district but areas in the field which were not drought-stricken showed little or no lodging. The weakness of the straw seemed to result from quick growth, early in July, that was halted by severe drought in the succeeding fortnight before the crop matured normally (B.J.S., P.M. Simmonds).

BARLEY

SPOT BLOTCH (Bipolaris sorokiniana) was 2-tr./10 fields in s. Alta. (J.S. Horricks) and was seen at Eston, Sask. (B.J. Sallans). It was found in trace amounts in Man. (H.A.H. Wallace) (C.P.D.S. 40:2. 64. 1960). Spot blotch infection was up to 40% in plots at Fredericton and was found in most fields of 6-rowed barley in N.B. (G.B. Orlob, R.H.E. Bradley) C.P.D.S. 40:2. 95. 1960). It was mod.-sev. on most varieties at Nappan, N.S. and was quite plentiful in P.E.I. (R.V. Clark).

COMMON ROOT ROT (Bipolaris sorokiniana, Fusarium spp.) was 32-tr. 20-sl. 2-mod. 2-sev./120 fields surveyed in n.- and c. Alta. (W.P. Campbell), and 5-tr. 1-sl. 4-sev./10 s. Alta. fields (J.S.H.) Twelve fields examined in Sask. showed an average disease rating of 11.9, similar to 1959 (B.J.S.). Plots at Fredericton, N.B. showed some evidence of root rot (R.V.C.).

ANTHRACNOSE (Colletotrichum graminicola) was sl. in plots at St. Charles de Caplan, Que. (D. Leblond).

NET BLOTCH (Drechslera teres). Infection was rated 39-tr. 24-sl. 23-mod. 19-sev./120 fields in n.- and c. Alta (W.P.C.) and 5-tr. 1-mod./10 fields in s. Alta. (J.S.H.). It was sl. in 4/12 Sask. fields, at Kerrobert, Glidden, Wimmer and Yorkton (B.J.S.). It was rated sl. in 65% of the fields in the southern part of the Prairie Provinces and mod.-sev. in 50% of the fields in northern Man. and Sask. and varied from tr.-sev. in n. Alta. (H.A.H.W.) (C.P.D.S. 40:2. 64. 1960). Infection ranged from 20-60% in N.B. in late July (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 95. 1960).

POWDERY MILDEW (Erysiphe graminis) was mod.-sev. on all plants in a plot of Vantage at Vancouver, B.C. (H.N.W. Toms). It was 2-tr. 1-sl./10 s. Alta. fields (J.S.H.). In plots at Saskatoon, Sask. varieties were affected as follows: very sev., Swan; sev., Vantage, Jubilee; mod.,

Warrior; sl., Montcalm, Parkland, OAC 21, Olli, Titan, Wolfe, Husky; tr., Betyes, Hannchen, Compana, Herta (B.J.S.). It was tr. in 1/89 fields in Man., at Homewood (H.A.H.W.) (C.P.D.S. 40:2. 64. 1960), and tr. with lesions mostly of the resistant-type reaction in P.E.I. (R.V.C.).

STEM RUST (Puccinia graminis). Infection was sl.-mod. in 7/89 Man. fields (H.A.H.W.) (C.P.D.S. 40:2. 64. 1960). It was tr. at Fredericton, N.B. and tr.-sl. on late-maturing material in P.E.I. (R.V.C.). Vantage was the only variety affected in nurseries at Charlottetown, P.E.I. (J.E. Campbell).

LEAF RUST (Puccinia hordei) was rated as tr.-sl. in 5/89 fields in Man. (H.A.H.W.) (C.P.D.S. 40:2. 64. 1960). It was mod.-sev. on Montcalm, M.C. 247 and Q.O. 4.13 in plots at St. Sebastien, Que. (D.L.) and tr. in 2 fields in Carlton Co., N.B. (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 95. 1960). Leaf rust was fairly plentiful on late-maturing material in P.E.I. (R.V.C.). All varieties in the rust nurseries at Charlottetown were heavily infected (J.E.C.). Infection was heavy in plots at St. John's West, Nfld. (O.A. Olsen, D.W. Creelman).

SCALD (Rhynchosporium secalis) was rated 49-tr. 13-sl. 6-mod. 1 sev. /120 fields in n.- and c. Alta. (W.P.C.) and 1-tr./10 s. Alta. fields (J.S.H.). It was 20 sl.-mod. /24 fields in n. Sask. and was tr. in 2 fields in n. Man. (H.A.H.W.) (C.P.D.S. 40:2. 64. 1960).

SPECKLED LEAF BLOTCH (Septoria passerinii). Traces only were seen in 120 n.- and c. Alta. fields at the time they were surveyed (W.P.C.). It was sl. in 7 fields in the Fairholme to Cater area of Sask. and sl. at Swan River and scattered points in s. Man. (H.A.H.W.) (C.P.D.S. 40:2. 64. 1960).

COVERED SMUT (Ustilago hordei). The following amounts were observed in barley fields in the Prairie Provinces: Alta.- Sylvan Lake, 10%; Sask.- Mont Nebo, 10%. Fenton, 6%. Kenal and Kelstern, 5%. Stenen, 4%; Man.- Ashville, 5% (H.A.H.W.) (C.P.D.S. 40:2. 65. 1960). It was 2-tr. 1-1%/8 N.B. fields (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 1960).

LOOSE SMUT (Ustilago nuda, U. nigra). Infection ratings were 42- tr. 2- 1%. 3- 3%. 2- 5%. 1- 6%/120 fields in n.- and c. Alta. (W.P.C.) and 1-tr./10 s. Alta. fields (J.S.H.). Thirteen/23 fields in Sask. had an average of 1% infection (R.C. Russell). In Man., infection at High Bluff was 12%, at Manson, 6%, at Ashville, Headingly and Ste. Agathe, 5% (H.A.H.W.) (C.P.D.S. 40:2.64. 1960). Eight fields of York barley nr. Guelph, Ont. had 6-20% infection. Other varieties were free or had only tr. infections (S.G. Fushtey) (C.P.D.S. 40:2. 65. 1960). In N.B. infection was 5-tr. 1-1%/8 fields (G.B.O. R.H.E.B.) (C.P.D.S. 40:2. 95. 1960). There was slightly more than in recent years in P.E.I. (J.E.C.) and it was 1-mod./4 fields in the Berwick, N.S. district (D.W. Creelman, R.G. Ross).

BACTERIAL BLIGHT (Xanthomonas translucens) was 6-tr./120 fields in c. Alta. (W.P.C.); mod. in plots at Riviere Ouelle, Que. (D.L.), and 5-10% on most varieties in plots but not in farmers' fields in N.B. (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 95. 1960).

STRIPE MOSAIC (virus). Mod infections were seen in plots in Man. but it was scarce in farmers' fields, possible due to the widespread use of Parkland which is comparatively resistant (W.A.F. Hagborg).

YELLOW DWARF (virus) was tr. at Carman, Treesbank and Pigeon Lake and sl. at Stead, Man. (H.A.H.W.) (C.P.D.S. 40:2. 63. 1960). It was tr. in plots at Ste. Anne de la Pocatiere, Que. (R.O. Lachance). Yellow dwarf was found in 90% of the fields surveyed in N.B. (G.B.O. R.H. E.B.) (C.P.D.S. 40:2. 95. 1960). and was tr.-sl. in plots in P.E.I. (R.V.C.).

RYE

COMMON ROOT ROT (Bipolaris sorokiniana). A sev. infection was seen in 1 field in Sask. (B.J. Sallans).

ERGOT (Claviceps purpurea). Infection was 5% in a field nr. Vegreville, Alta. (W.P. Campbell) and mod. in a field at Duck Lake, Sask. (B.J.S.). It was tr. in 4/4 fields examined in N.B. (G.B. Orlob, R.H.E. Bradley) (C.P.D.S. 40:2. 97. 1960) and was 5% on Prolific in the rust nurseries at Charlottetown, P.E.I. (J.E. Campbell).

POWDERY MILDEW (Erysiphe graminis) was sev. on 90% of Storm rye in plots at Vancouver, B.C. (H.N.W. Toms). It was tr.-20% in plots at Fredericton, N.B. and tr. in 2 farmers' fields (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 97. 1960) and tr.-sl at Nappan, N.S. (R.V. Clark).

STEM RUST (Puccinia graminis) was tr. in nurseries at Fredericton, N.B. (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 97. 1960) and was observed on Prolific rye in nurseries at Charlottetown, P.E.I. (J E.C.).

LEAF RUST (Puccinia recondita) was mod.-sev. in plots at Vancouver, B.C. (H.N.W.T.). It was rated at 50% in some plots at Fredericton, N.B. but was light in farmers' fields (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 97. 1960)., and was very heavy at Nappan, N.S.(R.V.C.). Prolific was infected in nurseries at Charlottetown, P.E.I. (J.E.C.) and leaf rust was heavy in plots at St. John's West, Nfld. (D.W. Creelman, O.A. Olsen).

SCALD (Rhynchosporium secalis) was tr. in 1/4 N.B. fields (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 97. 1960).

II. DISEASES OF FORAGE AND OTHER FIELD CROPS

A. FORAGE LEGUMES

ALFALFA

BLACK STEM (Ascochyta imperfecta). All 35 fields surveyed in Sask. were moderately infected. The disease was retarded by very dry conditions from July to Sept. (H.W. Mead). Infection was 10-20% in 6/6 N.B. fields and caused some early defoliation (G.B. Orlob) (C.P.D.S. 40:2. 85. 1960).

WINTER CROWN ROT (low-temperature basidiomycete) was tr.-sl. at Fort St. John, B.C. and Beaverlodge, Alta.; tr.-mod. in the Edmonton, Alta. area; and mod. at McLennan and High Prairie, Alta. (N. Colotelo, W.P. Campbell).

BACTERIAL WILT (Corynebacterium insidiosum) was mod. in 1 field near Edmonton, Alta. (N.C., W.P.C.). In s. Alta. infection was 7-tr.-sev. 3-mod.-sev./25 fields (E.J. Hawn). Wilt was found in Sask. only in experimental plots at Snowden and Saskatoon (H.W.M.).

ROOT ROT (Cylindrocarpon sp. and Fusarium sp.) affected plots at the Lacombe, Alta. Experimental Farm.(N.C.).

STEM NEMATODE (Ditylenchus dipsaci) was mod.-sev. in 2- and 3-year old irrigated plots on the Research Station Lethbridge, Alta. Its presence was suspected, but not confirmed, in some outlying fields (E.J.H.).

YELLOW LEAF BLOTCH (Leptotrochila medicaginis) was mod. in 2/3 fields examined at Ste. Anne de la Pocatiere (D.W. Creelman, R.O. Lachance) and infection was sl. on second growth at La Gorgondiere, Que. (D.W.C.). In N.B., it was rated at 20% on one-third of the crop in a field in Northumberland Co. (G.B.O.) (C.P.D.S. 40:2. 85. 1960).

DOWNY MILDEW (Peronospora aestivalis). Trace -mod. infections were found in 11/16 fields in B.C. and n. Alta., the disease being most serious around Fort St. John, B.C. and Beaverlodge, Alta. (N.C., W.P.C.). All replicates of one hybrid were heavily infected and badly stunted in experimental plots at Snowden, Sask. (H.W.M.).

COMMON LEAF SPOT (Pseudopeziza trifolii f. sp. medicaginis-sativae) was tr.-sl. in all fields visited in n. Alta. (N.C., W.P.C.), and 3-tr. /25 in s. Alta (E.J.H.). It was mod. in 3/3 fields at Ste. Anne de la Pocatiere, Que. (D.W.C., R.O.L.), averaged 30% in all fields surveyed in N.B. (G.B.O.) (C.P.D.S. 40:2. 85. 1960), and was tr-sl. at the Experimental Farm, Charlottetown, P.E.I. (J.E. Campbell).

CROWN BUD ROT (Rhizoctonia solani, Fusarium roseum, Ascochyta imperfecta). Infection was rated 5-tr.-sl. 5-sl.-mod. 13-mod.-sev./25 fields in s. Alta. (E.J.H.).

LEAF SPOT (Stagonospora meliloti) was sl. in experimental plots at Snowden and Saskatoon, Sask. (H.W.M.). It was rated 10% on 30% of the crop in 2 fields at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 85. 1960).

LEAF SPOT (Stemphylium botryosum) was sl. in 10/35 fields surveyed in Sask. (H.W.M.). Damage was sl. and infection was 35% in a field at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 85. 1960). It was tr. on Grimm at St. John's West, Nfld. (O.A. Olsen).

MOSAIC (virus) was 2-tr./25 fields surveyed in s. Alta. (E.J.H.).

WHITE LEAF SPOT (physiologic) appeared after drought had been broken by heavy rain in the Melfort, Sask. area (H.W.M.).

COMMON CLOVER

WINTER CROWN ROT (low-temperature basidiomycete). One field near McLennan, Alta. showed mod. infection (N. Colotelo, W.P. Campbell).

SOOTY BLOTCH (Cymadothea trifolii) was widespread but of little importance in N.B. except for a 30% infection on white clover in the forage nurseries at the Research Station, Fredericton (G.B.O.) (C.P.D.S. 40:2. 85. 1960). It was mod. in a field at Lawrencetown, N.S. (D.W. Creelman).

POWDERY MILDEW (Erysiphe polygoni). Trace infections were recorded on red clover at Cecil Lake, B.C. and it was sl. on the same host at Nampa, McLennan and Edmonton, Alta. (N.C., W.P.C.). It was mod. in 20/20 fields in n.-e. Sask. (H.W. Mead). Red clover was sev. infected in N.B. in early fall (G.B. Orlob) (C.P.D.S. 40:2. 86. 1960). It was 2-mod. 1-sev./5 fields nr. Fredericton, N.B. in July and a field at the Research Station, Kentville, N.S. showed mod. infection (D.W.C.). Trace infections were seen on red clover at the Experimental Farm, Charlottetown, P.E.I. (J.E. Campbell).

NORTHERN ANTHRACNOSE (Kabatiella caulivora). Trace-sl. infections were general throughout c.- and n. Alta. with some sev. infections at Nampa and McLennan in the Peace River District (N.C., W.P.C.). It was sl. in 3/20 fields in n.-e. Sask. (H.W.M.). Damage was 25% in 2 fields in w. N.B. and less in 3 other fields in n. N.B. (G.B.O.) (C.P.D.S. 40:2. 86. 1960).

COMMON LEAF SPOT (Pseudopeziza trifolii f. sp. trifolii-pratensis) was common in N.B. with an average infection of 30% (G.B.O.) (C.P.D.S. 40:2. 86. 1960).

LEAF SPOT (Stemphylium sarcinaeforme) was 18-mod./20 fields in n.-e. Sask. It is always common in this part of the province where dews are heavy and frequent (H.W.M.). Sl.-mod. infections occurred on red clover at the Experimental Farm, Charlottetown, P.E.I. (J.E.C.). Trace infections were seen on red clover at St. John's West and Colinet, Nfld. (O.A. Olsen).

RUST (Uromyces trifolii) was common in N.B. with infection as high as 50% in some localities (G.B.O.). (C.P.D.S. 40:2. 86. 1960). Slight infections were seen in 2/3 fields examined in the Berwick, N.S. district. (D.W.C.). and a tr. infection was recorded nr. Charlottetown, P.E.I. (J.E.C.).

DECLINE AND PHYLLODY (virus). Surveys of clover fields along the St. lawrence River valley between Montreal and Quebec City disclosed the presence of phyllody in red, alsike and ladino clovers. In 1959 the western limits of the disease appeared to be at Lavaltrie on the north shore and Contrecoeur on the south shore. In some portions of a clover field at Lavaltrie, infection reached a high of 50%. Surveys in 1960 indicated that the western limit of the disease was near St. Roch de l'Achigan, directly north of Montreal. The extension of the known western limit of the disease was probably due to more critical surveying although there is a possibility that the disease is spreading westward. Infected ladino and red clover was observed in fields at L'Epiphanie and L'Assomption as well as in most fields along the St. Lawrence between Montreal and Quebec City. Fairly heavy infection was observed at Charette, nr. Shawinigan Falls. Indications were that infection in 1960 was lighter than in 1959 (L.N. Chiykowski). Phyllody was more sev. in plots of ladino and white Dutch clover at Normandin than at any other point observed in Que. (R.O. Lachance). A sev. infection was seen on ladino at Riviere Ouelle, and it was observed on red and alsike clovers at Ste. Foy, Que. (D.W.C.).

MOSAIC (virus) was common red and white clover in the Okanagan Valley, B.C. (G.E. Woolliams). It was tr. on red clover at Upton, P.E.I. (J.E.C.).

SWEET CLOVER

ROOT ROT (Ascochyta imperfecta) was found in one field at Fort St. John, B.C. in mid-July (N. Colotelo, W.P. Campbell).

ROOT ROT (Cylindrocarpon sp. and Fusarium sp.) was mod. in plots at the Experimental Farm, Lacombe, Alta. (N.C., W.P.C.).

LEAF SPOT (Leptosphaeria pratensis) was 3-sl./35 fields examined in Sask. It caused sl. defoliation at Saskatoon (H.W.M.).

MOSAIC (virus) was frequently observed at different localities in the Okanagan Valley, B.C. (G.E. Woolliams).

B. OIL SEED CROPS

FLAX

ALTERNARIA BLIGHT (A. linicola) occurred in tr. amounts in the park belt district of Sask. (T.C. Vanterpool) (C.P.D.S. 40:2. 60. 1960).

SEEDLING BLIGHT (Rhizoctonia praticola). The outbreak in 1960 was the worst on record in Sask. Infection was 10-25% at Swift Current and tr.-1% at Delisle (T.C.V.) (C.P.D.S. 40:2. 59. 1960).

ROOT ROT (Rhizoctonia praticola, Pythium ultimum, Fusarium spp.) was widespread in Sask. (T.C.V.) (C.P.D.S. 40:2. 59. 1960).

SEEDLING BLIGHT (Rhizoctonia solani) occurred at Morden, Man. In some patches damage was 100% but the overall damage was less than 1%. Isolations yielded chiefly R. solani as well as Fusarium oxysporum var. redolans (W.A.F. Hagborg, W.L. Gordon).

ASTER YELLOWS (virus) was tr. in the parkbelt area of Sask. and virtually absent on the open prairie (T.C.V.) (C.P.D.S. 40:2. 60. 1960).

HEAT AND DROUGHT caused slight amounts of boll blight and sterility and 2 reported cases of heat canker in Sask. (T.C.V.) (C.P.D.S. 40:2. 59. 1960).

CHEMICAL INJURY. Injury from 2, 4-D caused some damage at Kincaid and Kindersley, Sask. The injury took the form of leaf doubling (T.C.V.) (C.P.D.S. 40:2. 60. 1960).

MUSTARD

ROOT ROT (Rhizoctonia solani). A trace infection was found in a dry land field near New Dayton, Alta. (J.S. Horricks).

RAPESEED

WHITE RUST (Albugo cruciferarum) was common in the parkbelt district of Sask., being most conspicuous in the Melfort-Nipawin and Meadow Lake districts (T.C. Vanterpool) (C.P.D.S. 40:2. 60. 1960).

BLACK SPOT (Alternaria spp.) was mod.-sev. at Meadow Lake and sl. in the Melfort-Nipawin area, Sask. (T.C.V.) (C.P.D.S. 40:2. 60. 1960).

ROOT ROT (Fusarium spp.). Traces only were found in Sask. (T.C.V.) (C.P.D.S. 40:2. 61.1960).

RING SPOT (Mycosphaerella brassicicola) was sev. at Meadow Lake in Aug. and was found in the Melfort-Nipawin District, Sask., in Sept. (T.C.V.) (C.P.D.S. 40:2.60. 1960).

STEM BLIGHT (Sclerotinia sclerotiorum) caused some damage at Meadow Lake and was tr. in the Aylsham, Sask. area (T.C.V.) (C.P.D.S. 40:2.61. 1960).

ASTER YELLOWS (virus). Traces were recorded at Shellbrook, Annaheim, Meadow Lake and Regina, Sask. (T.C.V.) (C.P.D.S. 40:2.61. 1960).

CHEMICAL INJURY. 2, 4-D drift caused some damage in one field in Sask. (T.C.V.) (C.P.D.S. 40:2.61. 1960).

SOYBEAN

STEM CANKER (Diaporthe phaseolorum) was sev. on the relatively small acreage planted to the variety Lincoln in s.-w. Ont. (A.A. Hildebrand). Approximately 10 plants in a 4-acre field at Ottawa, Ont. were affected. The pathogen was present in the perfect state (V.R. Wallen).

ROOT AND STALK ROT (Phytophthora megasperma var. sojae) was as widespread and sev. in s.-w. Ont. as at any time since it was first discovered in 1954. There was confirmatory evidence that incidence and severity are correlated with compaction of the soil. There was little doubt that this factor was of importance in the 4 bu./acre reduction in yield in 1960. The disease affected principally the variety Harosoy (A.A.H.).

MANGANESE DEFICIENCY was apparent, as usual, in many of the unsprayed fields in central Essex Co., Ont. (A.A.H.).

SUNFLOWER

POWDERY MILDEW (*Erysiphe communis) Wallr. ex Fries = Erysiphe cichoracearum DC.) Infection was 1-sev. 3-sl./21 fields examined in Man.

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* W.B. Cooke (Mycologia 44: 570-574. 1952) published a revision of the nomenclature of the species of Erysiphaceae known before 1832 in order to bring the names into line with the latest version of the International Rules of Botanical Nomenclature. Conformity with the Rules necessitates changes in the names of a number of our commonly encountered erysiphaceous fungi. These changes, which are being adopted by Canadian Plant Disease Survey, include the following:

It was also sev. on Helianthus maximiliani in a nursery at Winnipeg (W.C. McDonald).

RUST (Puccinia helianthi) was 11 tr./21 Man. fields. Three fields of susceptible varieties, 2 of which were the large-seeded type, had infections ranging from 5-15% of the leaf area (W.C. McD.).

WILT (Sclerotinia sclerotiorum), coupled with flooding, caused 100% killing of a 2-acre patch in a field nr. Burdett, Alta. The remainder of the field showed no damage. Wilt was also found in trace amounts in 1 field nr. Welling, Alta. (F.R. Harper). In Man. it was 6-tr. 1-5%. 1-25%/21 fields (W.C. McD.).

LEAF MOTTLE (Verticillium albo-atrum) was tr. in 5/21 fields in Man. Heavy infections developed in the disease nurseries at Winnipeg and Morden (W.C. McD.).

STALK ROT (various organisms) was 10-tr. 5-30%. 1-60%/21 fields examined in Man. The more sev. infections were confined to the Altona-Winkler area (W.C. McD.).

LEAF SPOT (cause undetermined). A leaf spot of unknown cause occurred in sl. amounts in 8/21 fields in Man. (W.C. McD.).

C. ROOT CROPS

SUGAR BEET

CROWN GALL (Agrobacterium tumefaciens) was reported to have caused more damage than usual at L'Assomption, Que. (D.W. Creelman).

LEAF SPOT (Cercospora beticola) was sev. in experimental plots at London, Ont. By 6 Oct. there was an average of 65 infections per leaf, based on the three oldest living leaves per plant, and considerable defoliation. The infection apparently spread from an area where garden beets had been growing the previous year. The sugar beets affected were grown from monogerm seed which appears to have little resistance (C.P.D.S. 39:38. 1960). (F.R. Forsythe).

ERYSIPHE COMMUNIS Wallr. ex Fries
= Erysiphe cichoracearum DC.
MICROSPHAERA PENICILLATA (Wallr. ex Fries) Lév.
= Microsphaera alni (Wallr.) Salmon
PODOSPHAERA CLANDESTINA (Wallr. ex Fries) Lév.
= Podosphaera oxyacanthae (DC.) de Bary
PHYLLACTINIA GUTTATA (Fries) Lév.
= Phyllactinia corylea (Pers.) Karst.
SPHAEROTHECA MACULARIS (Wallr. ex Fries) W.B. Cke.
= Sphaerotheca humuli (DC.) Burr.

ROOT ROT AND LEAF SPOT (Phoma betae) was found in a 5-acre area in a field nr. Picture Butte, Alta. Damage was confined to the crown area and involved about 1% of the roots in the affected patch. This field had been planted to sugar beets the previous year (F.R. Harper).

DRY ROT (Rhizoctonia solani) affected 10% of the plants in a 10-acre field at Ste. Pie, Que. Black root and dry rot were widespread in St. Hyacinthe Co., where 60% of the sugar beet production of Que. is centred (R. Crête).

D. MISCELLANEOUS CROPS

BUCKWHEAT

ASTER YELLOWS (virus) was tr. in buckwheat in N.S. (K.A. Harrison) (C.P.D.S. 40:2. 99. 1960).

TOBACCO

NEMATODES. High populations of Pratylenchus penetrans occurred in many flue-cured tobacco fields in s.-w. Ont. Seventy-three samples submitted by Extension Officers or individual growers contained populations ranging up to 6300 per lb. of soil (W.B. Mountain, R.M. Sayre).

WEATHER FLECK (non-parasitic). It was reported from Delhi, Ont. that tobacco leaves sprayed on both surfaces with Phygon XL-50 at 4 lb/acre had only 2-3% the amount of fleck occurring on unsprayed plants (D.W. Creelman).

E. CULTIVATED AND OTHER GRASSES

AGROPYRON

Ergot (Claviceps purpurea) was found several times on A. repens and other Agropyron spp. in c. Alta. (W.P. Campbell). Widely scattered tr. infections were noted in N.B. (G.B. Orlob) (C.P.D.S. 40:2.79. 1960).

Leaf Blight (Drechslera tritici-repentis). Infection of A. repens in N.B. was quite variable but generally light. It was found principally in the n.-and c. parts of the province (G.B.O.) (C.P.D.S. 40:2. 79. 1960).

Powdery Mildew (Erysiphe graminis) was generally mod. on A. intermedia in Sask. but was sev. on a farm nr. Saskatoon (H.W. Mead). A mod. infection was seen on A. repens in a field nr. Fredericton, N.B. (D.W. Creelman).

Head Blight (Fusarium avenaceum). Trace infections occurred on A. repens at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 79. 1960).

Tar Spot (Phyllachora graminis) occurred mostly as tr. infections in N.B. but was rated at 20% on A. repens in 2 fields at Fredericton (G.B.O) (C.P.D.S. 40:2. 80. 1960).

Stem Rust (Puccinia graminis) became sev. on A. repens late in the season in N.B. (G.B.O.) (C.P.D.S. 40:2. 80. 1960).

Leaf Rust (Puccinia recondita). Trace infections were common on A. repens in most parts of N.B. (G.B.O.) (C.P.D.S. 40:2. 80. 1960).

Scald (Rhynchosporium secalis) was sev. on A. repens nr. Fredericton and in localized areas in the eastern part of N.B. (G.B.O.) (C.P.D.S. 40:2. 79. 1960). The only previous report, to the Survey, of R. secalis on Agropyron is from B.C. (C.P.D.S. 23:37. 1944) (D.W.C.).

Speckled Leaf Blotch (Septoria elymi). Trace infections were recorded on A. repens in N.B. (G.B.O.) (C.P.D.S. 40:2. 79.1960). It has been reported on Agropyron from Alta. (C.P.D.S. 43:19. 1934)(D.W.C.).

Stem Smut (Ustilago spegazzinii) affected about 10% of A. repens in the Trout Creek Point district of B.C. (G.E. Woolliams). It was reported to be heavy on Agropyron sp. in the Estevan, Sask. area (T.C. Vanterpool).

Stripe Smut (Ustilago striiformis) was sl. on A. repens at Fredericton and in other areas of N.B. (G.B.O.) (C.P. D.S. 40:2. 80. 1960). It has been reported on A. trachycaulum from B.C. (C.P.D.S. 21:26. 1942) D.W.C.).

Bacterial Blight (Xanthomonas translucens f. sp. cerealis). Trace infections occurred on A. repens at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 79. 1960). The only previous report to the Survey is from Man. (C.P.D.S. 32:40. 1953). (D.W.C.).

AGROSTIS

Twist (Dilophospora alopecuri) was tr. on A. tenuis nr. Fredericton, N.B. (G.B.O) (C.P.D.S. 40:2. 80. 1960). This constitutes a new Canadian record, and is possibly a new one for North America. Sprague, Diseases of Cereals and Grasses in North America, 1950, does not list Agrostis as a host for this fungus (D.W.C.).

Eye Spot (Mastigosporium rubricosum) affected 20% of A. stolonifera at Hartland, N.B. (G.B.O.) (C.P.D.S. 40:2. 80. 1960). This disease has not been previously reported on Agrostis in Canada (D.W.C.).

Tar Spot (Phyllachora graminis) was tr. on Agrostis spp. nr. Woodstock and Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 80. 1960). The only previous report of tar spot on Agrostis in Canada is from N.S. (C.P.D.S. 32:40. 1953). (D.W.C.).

Stem Rust (Puccinia graminis) was sl. on A. stolonifera in western N.B. late in the season (G.B.O.) (C.P.D.S. 40:2.80. 1960).

Leaf Rust (Puccinia recondita) was tr. on A. perennans in N.B. (G.B.O.) (C.P.D.S. 40:2. 80. 1960).

Leaf Spot (Ramularia pusilla) was widespread, but generally light, on A. tenuis, A. stolonifera and A. perennans in N.B. One heavy infection was found nr. Fredericton (G.B.O.) (C.P.D.S. 40:2. 80. 1960). This if the first report, to the Survey, of R. pusilla on Agrostis (D.W.C.).

Leaf Blotch (Septogloeum oxysporum). A mod. infection was recorded on A. stolonifera at St. Clement, Temiscouata Co., Que. (D. Leblond). This is the first Canadian record of this organism on Agrostis. Sprague, Diseases of Cereals and Grasses in North America, 1950, lists it on Calamagrostis canadensis from Alta. (D.W.C.).

ANTHOXANTHUM

Ergot (Claviceps purpurea). Traces were found on A. odoratum in central N.B. (G.B.O.) (C.P.D.S. 40:2. 81. 1960). Sprague does not list Anthoxanthum as a host of this fungus (D.W.C.).

Brown Stripe (Passalora graminis) was found, though rarely, on A. odoratum in N.B. (G.B.O). (C.P.D.S. 40:2. 81. 1960). This is a new Canadian, and possibly North American, record (D.W.C.).

Stem Rust (Puccinia graminis) was tr. on A. odoratum nr. Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 81. 1960). This is the first report, to the Survey, of stem rust on this host (D.W.C.).

BROMUS

Ergot (Claviceps purpurea) was common on B. inermis in c.-and n. Alta. (W.P.C.), and was tr. on the same host in most parts of N.B. (G.B.O.) (C.P.D.S. 40:2. 81. 1960).

Leaf Blotch (Drechslera bromi) was sl. on Bromus spp. in 3/15 fields examined in Sask. (H.W. Mead). It was the most commonly encountered disease of Bromus spp. in N.B. in 1960 (G.B.O.) (C.P.D.S. 40:2. 81. 1960). This is the first report, to the Survey, of this disease east of Ont. (D.W.C.).

Bacterial Blight (Pseudomonas coronofaciens) was mod. on Bromus spp. in 5/15 fields in Sask. It was present on 13/16 strains and varieties at Saskatoon early in July (H.W.M.).

Scald (Rhynchosporium secalis) was sev. but caused only sl. damage on B. inermis at Fredericton and in e. N.B. (G.B.O.) (C.P.D.S. 40:2. 81. 1960).

Leaf Spot (Selenophoma bromigena) affected, to a mod. degree, all 15 fields of Bromus spp. examined in Sask. It developed early and rapidly at Saskatoon and by the end of June infection ranged from tr.-sev. on 11 synthetic strains and 5 varieties of B. inermis. Dry weather during July checked its development (H.W.M.).

Purple Brown Spot (Stagonospora bromi) was quite common on B. ciliatus in Victoria Co., N.B. Infection was as high as 20%. The pathogen was isolated (G.B.O.) (C.P.D.S. 40:2. 81. 1960). This represents a first report to the Survey (D.W.C.).

Head Smut (Ustilago bullata). Infection was 5% on B. ciliatus in 2 localities in western N.B. (G.B.O.) (C.P.D.S. 40:2. 81. 1960). This is the first report, to the Survey, of U. bullata on Bromus (D.W.C.).

CALAMAGROSTIS

Ergot (Claviceps purpurea) was found occasionally on C. canadensis in c. Alta. (W.P.C.). Widely scattered traces were seen on the same host in N.B. (G.B.O.) (C.P.D.S. 40:2. 82. 1960).

Head Mold and Leaf Blight (Fusarium avenaceum) was abundant on C. canadensis in localized areas in the St. John River Valley, N.B. (G.B.O.) (C.P.D.S. 40:2. 81. 1960). It has not been previously reported to the Survey (D.W.C.).

Eye Spot (Mastigosporium rubricosum). Infections of 10% of C. canadensis were frequently observed in the St. John River Valley, N.B. (G.B.O.) (C.P.D.S. 40:2. 82. 1960). It has not been previously reported to the Survey on this host (D.W.C.).

Crown Rust (Puccinia coronata f. sp. calamagrostidis) was rated at 10-20% on C. canadensis nr. Fredericton, N.B. late in Aug. (G.B.O.) (C.P.D.S. 40:2. 82. 1960).

DACTYLIS

Eye Spot (Mastigosporium rubricosum) was found on D. glomerata throughout N.B. with some infections as high as 90% in early June (G.B.O). (C.P.D.S. 40:2. 82. 1960).

Brown Stripe (Passalora graminis) was tr. on D. glomerata in irrigated plots at the Research Station, Lethbridge and in a field at Raymond, Alta. (E.J. Hawn). It was occasionally found on D. glomerata in N.B. (G.B.O.) (C.P.D.S. 40:2. 82, 1960) and was mod. on the same host as St. John's West and Colinet, Nfld. (D.W.C.).

Scald (Rhynchosporium orthosporum). Infection was 30-40% on D. glomerata in N.B. early in the season (G.B.O.) (C.P.D.S. 40:2. 82. 1960). This is the first report of this disease to the Survey though there is one collection (DAOM 55099) from Ottawa and Rhynchosporium sp. has been reported on Dactylis from Guelph, Ont. (C .P.D.S. 36:46. 1957) (D.W.C.).

Leaf Streak (Phyllosticta owensii) was sev. on D. glomerata in an orchard at La Gorgendiere, Que. in Oct. (D.L.). This disease has not been previously reported to the Survey (D.W.C.).

ELYMUS

Ergot (Claviceps purpurea) was found on Elymus sp. nr. Dawson Creek, B.C. (W.P.C.).

FESTUCA

Ergot (Claviceps purpurea) was found once on F. pratensis in c. Alta. (W.P.C.), and was tr. on F. rubra in N.B. (G.B.O.) (C.P.D.S. 40:2. 83. 1960).

Twist (Dilophospora alopecuri) was widely distributed on F. elatior nr. Fredericton and in w. N.B. (G.B.O.) (C.P.D.S. 40:2. 83. 1960). This is the first report, to the Survey, of twist on Festuca (D.W.C.).

Net Blotch (Drechslera dictyoides) was tr. on Festuca spp. nr. Fredericton and Woodstock, N.B. (G.B.O.) (C.P.D.S. 40:2. 83. 1960).

Silver Top (Fusarium poae). Infected specimens were received from Dawson Creek, B.C. where it had been observed in previous years. Infection occurred at all nodes (H.S. Pepin). This constitutes a new report to the Survey (D.W.C.).

Leaf Mold (Hendersonia culmicola) was tr. on F. rubra in N.B. The organism was probably secondary or saprophytic (G.B.O.) (C.P.D.S. 40:2. 83. 1960).

Brown Stripe (Passalora graminis). Trace infections occurred on F. rubra at 2 locations nr. Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 82. 1960).

Leaf Mold (Phaeoseptoria festucae) occurred as tr. infections on F. rubra in N.B. It appeared to be saprophytic only (G.B.O) (C.P.D.S. 40:2. 83. 1960).

Leaf Spot (Ramularia pusilla) was tr. in some meadows in w. N.B. (G.B.O.) (C.P.D.S. 40:2. 83. 1960).

Blast (Spermospora subulata). Infection was rated at 20% of the leaves of 30% of the plants of F. rubra nr. Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 83. 1960). This disease seems to have been previously reported only from western U.S.A. (D.W.C.).

GLYCERIA

Brown Stripe (Passalora graminis) was often seen on G. grandis in the St. John River Valley, N.B. Infection approached 20% at 2 locations (G.B.O.) (C.P.D.S. 40:2. 82. 1960). There have been no previous reports, on this host, to the Survey (D.W.C.).

Leaf Spot (Septoria avenae) was found on G. striata and G. canadensis at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 82. 1960). This is the first report, to the Survey, of S. avenae on Glyceria (D.W.C.).

Brown Smut (Ustilago longissima) was tr. on G. grandis nr. Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 82. 1960).

HORDEUM

Head Smut (Ustilago bullata) was rated at 50% on Hordeum sp. on 30 acres that had been flooded in the spring at Weyburn, Sask. (T.C.V.)

LOLIUM

Ergot (Claviceps purpurea). At Fredericton, N.B., 25% of the heads of 60% of the plants of Lolium perenne were replaced by sclerotia (G.B.O.) (C.P.D.S. 40:2. 83. 1960).

PHLEUM

Eye Spot (Heterosporium phlei) was common and destructive on P. pratense in N.B. (G.B.O.) (C.P.D.S. 40:2. 84. 1960). Infection of P. pratense was extremely sev. in Lunenburg Co., N.S. (K.A. Harrison), and it was mod. in all fields examined at St. John's West and Colinet, Nfld. (D.W.C., O. A. Olsen).

Brown Stripe (Passalora graminis) was found on virtually all timothy examined in N.B. Damage was probably in the range of 5% in loss of yield and lowering of quality (G.B.O.) (C.P.D.S. 40:2. 84. 1960).

Stem Rust (Puccinia graminis). Infection of timothy was 50% in one locality nr. Fredericton, N.B. and it was also sev. in localized areas throughout the province (G.B.O.) (C.P.D.S. 40:2. 84. 1960).

Stripe Smut (Ustilago striiformis) was tr. on P. pratense in Sunbury Co., N.B. (G.B.O.) (C.P.D.S. 40:2. 84. 1960).

POA

Silver Top (Fusarium poae). Infection of the node at the base of the inflorescence occurred at flowering time in several seed crops of Merion blue grass, Poa pratensis, nr. Dawson Creek, B.C. Loss was estimated at 12-14%. The condition also occurred there in 1959 (H.S.P., W.L. Gordon).

Purple Spot (Drechslera vagans) was rated as a 10% infection on Kentucky blue grass, Poa pratensis, during late spring in N.B. (G.B.O.) (C.P.D.S. 40:2. 84. 1960).

Leaf Mold (Epicoccum nigrum) was tr. on P. pratensis in N.B. (G.B.O.) (C.P.D.S. 40:2. 85. 1960).

Powdery Mildew (Erysiphe graminis) was common on P. pratensis at Fredericton, Chatham and Woodstock, N.B. Infection ranged from tr.-70% (G.B.O.) (C.P.D.S. 40:2. 84. 1960).

Brown Stripe (Passalora graminis) was seen on P. palustris in tr. amounts in all parts of N.B. (G.B.O.) (C.P.D.S. 40:2. 84. 1960).

Leaf Rust (Puccinia poae-nemoralis) was found on P. pratensis and P. palustris in c.- and e. N.B. Infection was 20% on Kentucky blue grass (P. pratensis) in nursery plots at Fredericton (G.B.O.) (C.P.D.S. 40:2. 84. 1960).

Stripe Smut (Ustilago striiformis). Tr. infection was recorded on P. pratensis at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 84. 1960).

SETARIA

Kernel Smut (Ustilago neglecta) infected up to 50% of S. lutescens growing in several orchards at Trout Creek Point, B.C. (G.E.W.).

LAWNS AND TURF

Snow Mold (low-temperature basidiomycete) was 1-sl. on Agrostis palustris, 1-sl. 1-mod. on A. tenuis and 1-sl. 1-mod. on Poa annua in 2 golf greens examined in s. Alta. It was also 1-tr. 1-sl./21 turf areas (J.B. Lebeau). Injury was sl. on lawns at Saskatoon, Sask. (H.W.M.).

Melting-out (Bipolaris sorokiniana) was prevalent on many golf greens and lawns at Winnipeg, Man. (W.C. McDonald).

Red Thread (Corticium fuciforme) caused mod. yellowing and killing in turf plots at the Exp. Farm, Saanichton, and in a lawn at Victoria, B.C. (R.G. Atkinson).

Leaf Spot (Drechslera vagans) was mod. on Poa pratensis in turf at Scott and Melfort, Sask. (H.W.M.).

Powdery Mildew (Erysiphe graminis). Numerous reports were received of powdery mildew on lawn grasses in Sask. (T.C.V.).

Fairy Ring (Marasmius oreades) was 8-sl. 1-mod/21 turf areas examined in s. Alta. (J.B.L.).

Slime Mold (Physarum cinereum). Several patches, up to 1 sq. ft. in area were observed in a lawn at Summerside, P.E.I. Sporangia covered

the leaf blades and were also present on weeds in the lawn. Damage was not assessed (G.W. Ayers, J.E. Campbell).

Stem Rust (Puccinia graminis). The new bluegrass, Poa pratensis, variety "Park" was 90% infected in plots at Saanichton, B.C. It seemed much more susceptible than either Kentucky or Merion bluegrass (R.G.A.). Two sev. infections on Poa pratensis were seen in 21 turf areas examined in s. Alta.(J.B.L.). P. pratensis was sev. attacked in one patch in a lawn at Ottawa, Ont. (D.W.C.).

Blight (cause unknown) caused widespread damage to lawns in Saskatoon, Sask. Large areas were killed. Fusarium acuminatum fruited profusely on dead leaves (H.W.M.).

Nitrogen Deficiency was rated as 5-mod. 2-sev./21 turf areas and 1-sl./2 golf greens examined in s. Alta. (J.B.L.).

III. DISEASES OF VEGETABLE AND FIELD CROPS

ASPARAGUS

RUST (Puccinia asparagi) was occasionally found as sl. infections in different parts of the Okanagan Valley, B.C. (G.E. Woolliams).

ROOT ROT (Fusarium oxysporum f. asparagi) affected 25% of the plants in a 35-acre field at St. Blaise, Que. (R. Crête).

CHEMICAL INJURY. The application of 2,4-D caused much twisting and yellowing of stalks in a 35-acre field nr. Napierville, Que. (R.C.).

BEAN

GRAY MOLD (Botrytis cinerea). Trace infections were found on the Soldier variety at Millville, N.B. (S.R. Colpitts).

ANTHRACNOSE (Colletotrichum lindemuthianum) was sev. on Soldier beans in N.B. Clipper and Michelite showed resistance (R.V. Clark). Small centers of infection developed around infected seedlings in the Sydney, N.S. area. Infection was rated at about 2% (K.A. Harrison). Trace amounts were seen in a home garden in Queens Co., P.E.I. (J.E. Campbell).

ROOT ROT (Fusarium spp.). F. solani f. phaseoli caused mod. losses in a 200-acre field as St. Cesaire, Que. Infection in the field ranged from 5-50%. At. Ste. Pie, Que. a 10-acre field showed patches of infection ranging from tr.-50% (R.C.). F. oxysporum was found in tr. amounts in a field at Weston, N.S. and specimens with accompanying reports of tr.-20% loss were received from various points in Kings, Annapolis and Digby counties. Isolations yielded predominantly F. oxysporum and Rhizoctonia solani (K.A.H.).

HALO BLIGHT (Pseudomonas phaseolicola) was rated at 2% in a 20-acre field at Millville, N.B. (S.R.C.).

WIRE STEM (Rhizoctonia solani) was observed on kidney beans at Ste. Foy, Que. (D. Leblond).

WILT (Sclerotinia sclerotiorum). Trace amounts of wilt were observed in a market garden nr. Charlottetown, P.E.I. in a bean field adjacent to one showing sev. Sclerotinia rot in cabbage and lettuce (J.E.C., D.W. Creelman).

BACTERIAL BLIGHT (Xanthomonas phaseoli) was sev. on the Soldier variety in N.B. Clipper, Michelite and Lapin showed resistance (R.V.C.).

MOSAIC (virus). was observed at the Research Station, Summerland, B.C. (G.E. Woolliams). A late-seeded crop of Black Seeded Pencil Pod near a planting of gladiolus was 90% infected at Kentville, N.S., and in another planting of Kentucky Wonder 40% of the plants were so sev. affected that they died. Leaves and stalks were badly stunted and showed streak-like symtpoms (K.A.H.). Three-5% damage was noted in a planting at Truro, N.S. (D.W.C.).

BEET

LEAF SPOT (Cercospora beticola). A sev. infection was seen in a one-half acre field at Cyrville, Ont. (D.W. Creelman). At St. Michel, Que., 10% of the foliage in several fields, totalling 10 acres, was affected (R. Crête).

SCAB (Streptomyces scabies) was rated as about 60% infection in a one-half-acre field in the Sydney, N.S. area. Fifteen % of the roots were rendered unsaleable (K.A. Harrison).

ROOT ROT (Verticillium albo-atrum). Eight /12 roots from an affected lot on the Quebec City market yielded V. albro-atrum on isolation. Both internal and external symptoms were observed (D. Leblond).

DAMPING - OFF (cause undetermined) was reported from Bangor, Sask. (T.C. Vanterpool).

BROCCOLI

BORON DEFICIENCY. A number of plants at Kentville, N.S. showed poor development of the buds. They were growing near cauliflower plants that showed definite boron deficiency symptoms (K.A. Harrison).

UNTHRIFTINESS (cause undetermined) caused 25-30% loss in 2 fields at Florenceville, N.B. The condition was characterized by lack of root development, stunting and general unthriftiness of the plants, chlorosis and slight wilting. Lesions, resembling those caused by Rhizoctonia, were found on the stems and also, in a few cases, warty outgrowths from leaf scars. A species of Alternaria was isolated, but not consistently. There is a possibility that trace amounts of potato top-killer may have caused the condition. The growers used potato sprayers in applying insecticides (K.M. Graham).

CABBAGE

DOWNY MILDEW (Peronospora parasitica) was sl. in a 1-acre experimental plot at Ste. Clothilde, Que. (R. Crête). Sev. damage was reported in a planting at Bridgewater, N.S. (K.A. Harrison).

CLUB ROOT (Plasmodiophora brassicae). Infected specimens were received from St. Edouard, Lotbiniere Co., Que. (D. Leblond). A small garden planting at Ste. Anne de la Pocatiere was completely destroyed (R.O. Lachance). Club root is prevalent in most areas of N.B. but is rarely serious where rotations are followed. A 15% infection was observed at Woodstock (S.R. Colpitts). It was less sev. than usual in P.E.I. in 1960 probably due to much drier weather conditions (J.E. Campbell).

SCLEROTINIA ROT (S. sclerotiorum) was sl. in 1 field in the Montreal, Que. district (J. Simard, R. Crête, T. Simard) (C.P.D.S. 40:2. 73. 1960). A sev. attack occurred in a localized area in a market garden nr. Charlottetown, P.E.I. Sclerotia were abundant on affected heads (J.E.C., D.W. Creelman).

BLACK ROT (Xanthomonas campestris) caused approx. 1% unmarketable heads in a field of early cabbage at Lethbridge, Alta. (F.R. Harper).

BACTERIAL LEAF SPOT (Xanthomonas vesicatoria var. raphani) was tr. in 1 field in the Montreal, Que. area (J.S., R.C., T.S.) (C.P.D.S. 40:2. 73. 1960).

MOLYBDENUM DEFICIENCY symptoms were sev. at Winterbrook and St. David's, Nfld. (O.A. Olsen).

CARROT

LEAF BLIGHT (Alternaria dauci). Infection was tr.-5% in about 100 acres of carrots at Sherrington, Que. early in July. Little increase was noted until late Aug. and by Sept. many mod.-sev. infections were recorded in the district (J. Simard., R. Crête, T. Simard.) (C.P.D.S. 40:2. 73. 1960). The disease remained at the tr. level in the Berwick, N.S. area, probably due to dry weather conditions (K.A. Harrison).

GRAY MOLD (Botrytis cinerea). One lot of mechanically-harvested carrots suffered up to 20% loss from various causes in storage at Grand Pre, N.S. Half of this loss was caused by Botrytis. Traces of gray mold infection were noted on the foliage in the field (K.A.H.).

LEAF SPOT (Cercospora carotae). Trace-5% infection was recorded in 100 acres of carrots at Sherrington early in July. Yellowing of foliage was just beginning at that time but potential damage was great (R.C., D.W. Creelman). Dry weather checked further spread through July and Aug. but it increased considerably in Sept. and some sev. infections developed (J.S., R.C., T.S.) (C.P.D.S. 40:2. 73. 1960). Trace infections were seen in the Sydney, N.S. area in Aug. and, though present in several fields in Kings Co., it did not become serious in 1960 (K.A.H.).

ROOT-KNOT NEMATODE (Meloidogyne sp.). Slight-mod. infections were found in 3/5 fields examined in the south section of the Grand Bend Marsh, Ont. (J.R. Chard) (see also Sayre, R.M., C.P.D.S. 40:2. 75. 1960). It was also sl.-mod. in 5 fields in the Montreal area (J.S., R.C., T.S.) (C.P.D.S. 40:2. 73. 1960).

SCLEROTINIA ROT (S. sclerotiorum). Several small fields in the Sydney, N.S. area showed tr. infections on the crown in Aug. It was potentially dangerous to the crop (K.A.H.).

BLACK ROT (Stemphylium radicinum). Slight crown and root infections were found on a small percentage of Imperator carrots in a commercial field at Armstrong, B.C. in Oct. (G.E. Woolliams).

BACTERIAL BLIGHT (Xanthomonas carotae). Ten % infection was found in one field of carrots at Armstrong, B.C. Another field, of the same variety but from a different seed source, was not affected (G.E.W.).

ASTER YELLOWS (virus). Trace infections were seen in a garden patch at Lethbridge and in a market garden at Medicine Hat, Alta. (J.S. Horricks, F.R. Harper). Infection was light in most home gardens and small plantings at La Salle and Jeanette's Creek, Ont. The disease appeared late (C.D. McKeen). It was sl.-mod. in 2 fields in the Montreal, Que. district. Leaf hopper populations were low (J.S., R.C., T.S.) (C.P.D.S. 40:2. 73. 1960). Hairy root symptoms were as follows at certain Que. points: St. Joachin, Gaspe, -tr; Quebec City, 1.5%; Ste. Anne de la Pocatiere, 5.7%; Lac St. Jean, 15%. Foliage infection was 15% at Caplan (R.O. Lachance). Yellowing and hairy root were prominent in the Maugerville area and at the Research Station, Fredericton, N.B. One garden at Fredericton was 50% infected (K.M. Graham). Four/4 fields nr. Fredericton showed sl. infection in mid-July (D.W.C.). Infection was prevalent in most parts of N.B. It was 20% at Norton (S.R. Colpitts). Tr. infections were seen in Nantes in the Sydney area in Aug. It was extremely sev. in some early-planted fields in Kings Co., and infection was 30% at Cole Harbor, N.S. (K.A.H.) (C.P.D.S. 40:2. 99. 1960). The heaviest infections ever seen in P.E.I. occurred in 1960. Rates of infection were up to 95%. Some growers achieved a measure of control by spraying to control the vector (J. E. Campbell). It was tr. at St. John's West, Nfld. (O.A. Olsen).

CHEMICAL INJURY. Fertilizer burn caused excessively swollen lenticels, burning of root tip, and heavy growth of lateral feeder roots in a market garden in peat soil at South Burnaby, B.C. (H.N.W. Toms). Some injury was caused at Sherrington, Que. by drift of a herbicidal spray. Foliage was spotted and white (R.C.).

CAULIFLOWER

SOFT ROT (Erwinia carotovora). Approximately 10% of the crop in a 4-acre field at Leamington, Ont. was destroyed in the button stage by soft rot (C.D. McKeen).

CLUB ROOT (Plasmodiophora brassicae). A mod. infection developed in a low, moist area in a market garden nr. Charlottetown, P.E.I. Club root was less serious than usual in the province. Many growers are now having their soil assayed for the presence of P. brassicae before planting cruciferous crops (J.E. Campbell).

SCLEROTINIA ROT (S. sclerotiorum). Damage was assessed at 5% in a planting nr. Charlottetown, P.E.I. in July. Heads were rotted and sclerotia were abundant. Cabbage in the same field were also affected (D.W. Creelman).

BORON DEFICIENCY. Damage to an early crop at Norton, N.B. was rated at 5%. A later crop, treated with boron sprays, was unaffected (S.R. Colpitts). Symptoms were observed in a home garden at Kentville, N.S. (K.A. Harrison).

WHIPTAIL (Molybdenum deficiency). Only trace amounts were observed in P.E.I. in 1960. Growers are using molybdenum treatments in areas where deficiency is suspected (J.E.C.). Symptoms were most pronounced at St. John's West and Colinet, Nfld. This disorder is common on Nfld. soils (D.W.C.).

BLINDNESS (cause undetermined) affected two plantings in the Berwick, N.S. area. The curd failed to develop in about 10% of the plants and leaves were coarse and rank. There was no evidence of a central bud. The condition appeared to be associated with seed source (K.A.H.).

CELERY

EARLY BLIGHT (Cercospora apii) was sl. in one field in the Montreal, Que. area (J. Simard, R. Crête, T. Simard.) (C.P.D.S. 40:2. 73. 1960).

ROOT-KNOT NEMATODE (Meloidogyne sp.) affected celery in the south portion of the Grand Bend Marsh, Ont. (J.R. Chard).

LEAF SPOT (Phyllosticta ? apii) was mod. in plots at Ste. Foy, Que. Numerous pycnidia developed in large spots on the lower leaves (D. Leblond).

DAMPING-OFF (Rhizoctonia solani, Pythium sp.). Moderate - sev. losses occurred in 3 seed beds in the Montreal, Que. area. Loss was 40-50% in one bed (J.S., R.C., T.S.) (C.P.D.S. 40:2. 73. 1960).

LATE BLIGHT (Septoria apii) was sl. in one field in the Montreal area (J.S., R.C., T.S.) (C.P.D.S. 40:2. 73. 1960).

PINK ROT (Sclerotinia sclerotiorum) was tr. in one field in the Montreal area (J.S., R.C.) (C.P.D.S. 40:2. 73. 1960).

PIN NEMATODE (Xiphinema sp.) caused some stunting of celery in the Thedford and Grand Bend Marshes, Ont. All varieties of celery seemed to be susceptible. It was most prevalent in fields where celery has been grown for several years. Other crops did not appear affected (J.R.C.).

ASTER YELLOWS (virus). The incidence of aster yellows was reported to be the lowest in years in the Burlington, Ont. district. Trace infections only were found (D.W. Creelman). It was tr. in one field in the Montreal, Que. area (J.S., R.C., T.S.) (C.P.D.S. 40:2. 73. 1960).

MAGNESIUM DEFICIENCY occurred as trace amounts in three fields in the Montreal, Que. area (J.S., R.C., T.S.) (C.P.D.S. 40:2. 73. 1960).

CUCUMBER

LEAF BLIGHT (Alternaria cucumerina) was extremely sev. in the Maugerville district of N.B. Several plantings were plowed under in mid-season (K.M. Graham).

GRAY MOLD (Botrytis cinerea) destroyed a few plants in each of several greenhouses at Leamington, Ont. in April and May (C.D. McKeen).

SCAB (Cladosporium cucumerinum). During the second week in July many crops of the Burpee Hybrid variety grown nr. Harrow, Ont. developed infections on from 1-20% of the fruits harvested. Bacterial infections developed in scab lesions and several shipments of fruits broke down in transit to market. It is thought that unseasonably cool nights in late June and early July predisposed fruits to infection (C.D. McK.). Infection averaged 2-5% in a 3-acre field at Sherrington, Que. (R. Crête). Specimens were received from Princeville, Thetford Mines, La Tuque and Ste. Foy, Que. (D. Leblond). Severe infections were recorded at Portneuf and Ste.

Anne de la Pocatiere, Que. (L.J. Coulombe). The early crop in Queens and Sunbury counties, N.B. was 10-75% infected but the late crop was reasonably clean (S.R. Colpitts). Three/4 fields observed in the Maugerville and Grand Lakes, N.B. areas had sev. infections. This disease has been the cause of major losses for several years. Only the variety Highmoor showed some resistance (K.M.G.). It was sl. in a home garden nr. Souris, P.E.I. (J.E. Campbell).

ANTHRACNOSE (Colletotrichum lagenarium) was tr. in one field in the Montreal area (J. Simard, R. Crête, T. Simard) (C.P.D.S. 40:2. 73. 1960).

DODDER (Cuscuta sp.) was reported parasitizing plants in a field at Maugerville, N.B. (D.W. Creelman).

POWDERY MILDEW (Erysiphe communis Wallr. ex Fries = E. cichoracearum DC.) was prevalent in several greenhouse crops and most field crops in s.-w. Ont. Damage was variable (C.D. McK.) It was more prevalent than usual in the Niagara Peninsula, Ont. One small planting was 100% infected (J. Bradbury).

ANGULAR LEAF SPOT (Pseudomonas lachrymans) was observed on all plants in 2 market gardens at Medicine Hat, Alta. Trace damage was recorded (F.R. Harper). Only 2 occurrences were reported in s.-w. Ont. The seed-borne source of the 2 outbreaks was apparent (C.D. McK.). Infection was 15% in a 3-acre planting at Sherrington, Que. (R.C.). A very sev. infection developed in a one-half-acre planting grown in heated ground beds in Colchester Co., N.S. (K.A. Harrison).

DAMPING-OFF AND ROOT ROT (Pythium sp.). Heavy losses were incurred by growers in s.-w. Ont. who set out the early crop under paper caps. The cold, cloudy weather in early May favored the disease (C.D. McK.).

FOLIAGE BLIGHT (Trichothecium roseum) caused a heavy destruction of foliage in 3 greenhouses at Leamington, Ont. (C.D. McK.).

MOSAIC (virus) was reported to be trace in commercial plantings in the Maugerville, N.B. district (D.W.C.). A sev. outbreak was seen in a small garden plot at Kentville, N.S. (K.A.H.).

NECROSIS VIRUS. The soil-borne nature of this virus was demonstrated in the greenhouse at Harrow and Leamington, Ont. The first infected plants show symptoms about 17 days after planting (C.D. McK.).

CHEMICAL INJURY. Salt water seepage through a dike on a tidal river at Ladner, B.C. is thought responsible for injury to cucumber foliage (H.N.W. Toms).

DROUGHT AND HEAT INJURY is thought responsible for failure of cucumbers to set at Estevan, Sask. (T.C. Vanterpool).

DILL

ASTER YELLOWS (virus). Trace infections were seen at Cole Harbor, Halifax Co., N.S. (K.A. Harrison).

EGGPLANT

NEMATODES (Pratylenchus penetrans). Seven fields in the Harrow, Ont. district were sampled. All were heavily infected with the meadow nematode with populations up to 6500/lb. of soil (W.B. Mountain, R.M. Sayre).

WILT (Verticillium spp.). V. dahliae affected plants in a home garden at Westbank, B.C. (G.E. Woolliams.) V. albo-atrum rendered some crops very unproductive nr. Harrow, Ont. because of the early onset of wilt. It varied from a trace to 95% in 7 fields surveyed (C.D. McKeen).

GARLIC

SMUDGE (Colletotrichum circinans) was seen on garlic received from Thetford Mines, Que. (D. Leblond).

WHITE ROT (Sclerotium cepivorum) affected garlic bulbs at Thetford Mines, Que. Crowded, pin-head, black sclerotia were formed (D.L.).

HORSERADISH

FERN LEAF (? virus). Symptoms were observed on horseradish grown at Quebec City, Que. (D. Leblond).

LETTUCE

GRAY MOLD ROT (Botrytis cinerea). A loss of about 1% occurred in a large planting at Grand Pre, and losses ranging from tr.-1% were noted in several fields in the Sydney, N.S. district (K.A. Harrison). Slight damage was seen in 2 fields at St. John's West, Nfld. (D.W. Creelman).

DOWNY MILDEW (Bremia lactucae) was found in most fields examined in the St. Remi- Ste. Clothilde area, Que. Incidence range from tr.-50% (R. Crête).

ROOT-KNOT NEMATODE (Meloidogyne sp.) was found on lettuce in the south section of the Grand Bend Marsh, Ont. (J.R. Chard).

BIG VEIN (Olpidium sp. associated) Several crops of spring-grown lettuce in the Harrow, Ont. area had incidences of big vein varying from tr.-

40%. Tobacco necrosis virus was isolated from the roots of 3 of 6 affected plants (C.D. McKeen).

BOTTOM ROT (Rhizoctonia solani) was tr. in 4 fields in the Montreal, Que. area (J. Simard, R. Crête, T. Simard) (C.P.D.S. 40:2. 73. 1960).

DROP (Sclerotinia sclerotiorum) caused an estimated 10% loss in 100 acres of lettuce in the Ste. Clothilde - Sherrington district, Que. It appears regularly in this area and losses in some years are as high as 30% (R.C.). It was tr. at St. Charles de Caplan and sev., causing the complete loss of the crop at Ste. Foy, Que. (D. Leblond). Incidence was high in 2 fields at Maugerville, N.B. in July. Ten-20% of the plants were affected (D.W.C.). Trace amounts were found at Grand Pre and at Sydney, N.S. Dry weather had apparently checked disease development (K.A.H.). Several hundred lettuce transplants died soon after being set in the field nr. Charlottetown, P.E.I. It is thought that the compost soil used in the flats was contaminated with S. sclerotiorum (J.E. Campbell). Twenty - 25% of the plants were affected in a market garden nr. Charlottetown in July (D.W.C.).

ASTER YELLOWS (virus) was tr.-sl. in 4 fields in the Montreal area (J.S., R.C., T.S.) (C.P.D.S. 40:2. 73. 1960) Infection in the field in e. Que. did not exceed 5% (R.O. Lachance), and tr.-sl. infections only were recorded in fields nr. Fredericton, N.B. (D.W.C.). The disease ranged as high as 35% in the Annapolis Valley; 5-40% in the Sydney area; and up to 100% at Cole Harbor, N.S. (K.A.H.) (C.P.D.S. 40:2. 99. 1960). It built up to about a 90% infection in mid-season in the vicinity of Charlottetown, P.E.I. Some reduction was effected where spraying for vector control was practiced (J.E.C.).

MOSAIC (virus) was sl. in 6 fields in the Montreal, Que. area (J.S., R.C., T.S.) (C.P.D.S. 40:2. 73. 1960). Trace amounts were seen in a field at Maugerville, N.B. and in 1/2 fields examined nr. Charlottetown, P.E.I. (D.W.C.). It was tr. in the Sydney, N.S. area and mosaic-like symptoms were observed in 3 fields at Grand Pre, N.S. (K.A.H.).

CALCIUM DEFICIENCY was observed, especially along drainage ditches, in one field in the Montreal area (J.S., R.C., T.S.) (C.P.D.S. 40:2. 73. 1960).

MELON

LEAF SPOT (Alternaria cucumerina) appeared earlier at the Research Station, Harrow, Ont. than previously recorded. Zineb and maneb fungicides, where properly applied, were effective in controlling the disease (C.D. McKeen).

ANTHRACNOSE (Colletotrichum lagenarium). An unusually high incidence of this disease was observed in several fields in the Harrow, Ont. area. It occurred even in some crops where a fungicidal program was being followed (C.D. McK.).

WILT (Fusarium oxysporum f. melonis) occurred in a few fields in s.-w. Ont. where wilt-resistant varieties are not being grown. The resistant varieties and hybrids that have been grown for several years still show the same degree of resistance they possessed when first introduced (C.D. McK.).

DAMPING-OFF AND ROOT ROT (Pythium sp.) Heavy losses were experienced by growers who set out the early crop under paper covers. Cold and cloudy weather favored disease development (C.D. McK.).

ONION

PURPLE BLOTCH (Alternaria porri) was tr.-sl. in 4 fields in the Montreal, Que. area (J. Simard, R. Crête, T. Simard) (C.P.D.S. 40:2. 74. 1960).

NECK ROT (Botrytis allii). Traces of damage occurred in plots at the Univ. of Man., Winnipeg (W.C. McDonald).

SMUDGE (Colletotrichum circinans). Onions purchased in Ottawa but grown in the Bradford Marsh, Ont. were heavily infected (D.W. Creelman).

BULB ROT (Fusarium oxysporum f. cepae) was sl. in most onion fields in the Kelowna, B.C. district (G.E. Woolliams). Specimens were received from Berthier, Que. (D. Leblond). One % infection was seen in onions from Kentville and Kingsport, N.S. (K.A. Harrison).

ROOT-KNOT NEMATODE (Meloidogyne sp.) was very light on onions in the south section of the Grand Bend Marsh, Ont. (J.R. Chard).

DOWNY MILDEW (Peronospora destructor) caused some damage to onion seed crops in the Grand Forks district and to fall-planted onions at Kelowna, B.C. (G.E.W.). It was tr. in a small planting of Red Wethersfield onions at Ottawa, Ont. (V.R. Wallen), and sev. at St. Ephrem, Beauce Co., Que. (D. Leblond).

SMUT (Urocystis cepulae) was more serious in the Okanagan Valley, B.C. than in any previous year (M.F. Welsh), and was more serious than in recent years in the Winnipeg, Man. area (W.C. McD.). It was sl. in one field in the Montreal, Que. area (J.S., R.C., T.S.) (C.P.D.S. 40:2. 74. 1960).

YELLOW DWARF (virus) affected 15% of the young plants in 2 one-acre fields at La Salle, Ont. preventing their sale as green bunching onions. The setts used in planting both fields came from the same source at Leamington, Ont. (C.D. McK.).

NITROGEN AND CALCIUM DEFICIENCIES were sl. in two fields in the Montreal, Que. area (J.S., R.C., T.S.) (C.P.D.S. 40:2. 74. 1960).

PARSLEY

ASTER YELLOWS (virus) was tr. in parsley at Cole Harbor, Halifax Co., N.S. (K.A. Harrison) (C.P.D.S. 40:2. 99. 1960).

PARSNIP

LEAF SPOT (Cercospora pastinacae). Trace infections were seen in 2 fields at Maugerville, N.B. Abundant lesions found on wild parsnip in the vicinity are believed to be the source of inoculum for the disease on the cultivated crop (K.M. Graham).

LEAF SPOT (Ramularia pastinacea) was mod. in a large planting at Cyrville, Ont. (D.W. Creelman).

ASTER YELLOWS (virus). Infection was 10% in Kings Co. and 1% at Cole Harbor, N.S. (K.A. Harrison) (C.P.D.S. 40:2. 99. 1960).

PEA

ROOT ROT (Ascochyta pinodella) was mod.-sev. in 1 field at Douglas, Ont. and in 1 at Shawville, Que. (V.R. Wallen) (C.P.D.S. 40:2. 98. 1960).

LEAF AND POD SPOT (Ascochyta pisi). Trace infections occurred on the varieties Arthur and Delwiche at Fortier, Man. (W.A.F. Hagborg). A heavy infection of canning peas was observed early in the season at Bedeque, P.E.I. The onset of dry weather checked the spread of infection (J.E. Campbell).

GRAY MOLD (Botrytis cinerea) A 30% infection caused 5% damage to Tall Telephone peas at Springhill, N.B. (S.R. Colpitts). Trace infections were seen on the lower leaves of canning peas in several fields at Berwick, N.S. (K.A. Harrison).

POWDERY MILDEW (Erysiphe polygoni). Infected specimens, with numerous cleistothecia, were received from Bonkur, B.C. (G.E. Wooliams). Slight damage was incurred in Sask. in the latter part of the season (R.J. Ledingham). Late-season infection caused some damage in market gardens in P.E.I. The early crop was harvested before any damage occured (J.E.C.).

WILT AND ROOT ROT (Fusarium sp.) was sev. on 20% of the plants in one field of Chancellor peas in the Ottawa Valley, Ont. (V.R.W.) (C.P.D.S. 40:2. 98. 1960). Appreciable losses occurred in canning peas at Berwick, N.S. (K.A.H.).

DOWNY MILDEW (Peronospora pisi). affected 120 acres of canning peas at Westham Island, nr. Ladner, B.C. (H.N.W. Toms). It was general, though of little importance, throughout the Creston, B.C. area (G.E. W.). Heavy development of downy mildew on the lower leaves of canning peas at Berwick, N.S. did not prevent vigorous growth of the plants (K.A.H.). It is stated in Index of Plant Diseases in the United States, U.S.D.A. Agr. Handbook 165, 1960, that Peronospora pisi Sydow is probably only a physiological form of Peronospora viciae (Berk.) Casp. (D.W. Creelman).

BACTERIAL BLIGHT (Pseudomonas pisi). Infection was observed in the varieties Sterling and Chancellor in Man., though no appreciable loss was incurred (W.A.F.H.).

LEAF SPOT (Septoria pisi). was tr. on Chancellor at Antrim and mod. on Delwiche at Douglas, Ont. and tr. on Delwiche at Shawville, Que. (V.R.W.) (C.P.D.S. 40:2. 98. 1960).

RUST (Uromyces fabae). Infection was noted with 3-5 pustules per leaf in several gardens in Kings Co., N.S. in June. Secondary spread was evident in July (K.A.H.). It was sev. in a garden planting at Greenwich, N.S. early in Aug. (D.W.C.).

ROOT ROT (various pathogens). All nine fields examined in s. Alta. were infected. Damage was 3-sev. 2-mod./5 fields nr. Taber and was tr.-sl. in 4 fields nr. Lethbridge. Infections in the Lethbridge area ranged from 10-100%. Isolations yielded Fusarium spp. from all fields, Pythium spp. from 2 severely damaged fields and Rhizoctonia solani from 1 severely damaged field (F.R. Harper). Root rot is becoming more prevalent in canning peas in e. Ont., probably due to the short rotations used with this crop. Yield was reduced 25% in one of the fields inspected (B.E. Beeler).

ENATION MOSAIC (virus) was sl. on 5% of Chancellor peas in 1 field at the Cent. Exp. Farm, Ottawa, Ont. (V.R.W.) (C.P.D.S. 40:2. 98. 1960).

MOSAIC (virus) was mod. on 50% of Chancellor peas in a field on the Cent. Exp. Farm, Ottawa, Ont. (V.R.W.) (C.P.D.S. 40:2. 98. 1960). Late-planted gardens in Kings Co., N.S. were badly infected. Control of aphids was excellent in commercial fields and little mosaic was found (K.A.H.).

STREAK (virus) was sev. on 50% of Chancellor peas in a field at the Cent. Exp. Farm, Ottawa, Ont. It was also present in one field each of Chancellor, Arthur and Director (V.R.W.) (C.P.D.S. 40:2. 98. 1960).

PEPPER

SPIRAL NEMATODE (Helicotylenchus erythrinae). Two fields at Harrow, Ont. were heavily infested. The actual amount of damage to the crop could not be assessed (W.B. Mountain, R.M. Sayre).

WILT (Verticillium albo-atrum) was sev. in 2 crops nr. Harrow, Ont. Both crops were in fields that have been planted to pepper every second or third year (C.D. McKeen).

BACTERIAL SPOT (Xanthomonas vesicatoria). The seed-borne nature of this disease was evident in a few fields of sweet pepper nr. Harrow, Ont. Seed from some sources produced infected seedlings whereas seed from other sources did not (C.D. McK.).

BLOSSOM-END ROT (physiological) incidence seemed about normal for s.w. Ont. in August (C.D. McK.). Two % loss was recorded in Sept. at Kentville, N.S. (K.A. Harrison).

ALFALFA MOSAIC (virus). A few infected plants were found in 3 small fields nr. Harrow, Ont. early in the season. Aphid populations were light and little spread took place (C.D. McK.).

TOBACCO ETCH (virus). Slight infections occurred late in a few crops nr. Harrow, Ont. and damage was light (C.D. McK.).

POTATO

The data presented in Tables 1 to 3 were supplied by Mr. J.W. Scannell, Plant Protection Division, Production and Marketing Branch, Canada Department of Agriculture. Both the acreage entered and acreage

Table 1. Seed Potato Certification
Acreage Passed by Variety and Province - 1960

Variety	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.-Alta.	B.C.	Totals
Sebago	20,750	13	552	84	407	-	23	21,829
Kennebec	1,497	191	3,692	1,224	127	130	265	7,126
Katahdin	1,014	13	5,108	337	163	-	8	6,643
Netted Gem	14	62	743	-	5	1,680	2,389	4,893
Green Mountain	728	35	194	2,534	28	-	25	3,544
Red Pontiac	140	30	1,961	-	4	522	42	2,699
Irish Cobbler	1,458	39	172	90	56	157	-	1,972
Keswick	75	29	739	476	70	-	4	1,392
Fundy	477	41	391	-	8	2	-	919
Norland	-	-	-	-	2	412	6	420
Warba	42	12	6	2	16	180	117	375
Cherokee	119	24	33	47	12	9	-	244
Chippewa	9	-	54	-	86	1	-	150
Huron	-	2	20	5	88	-	1	116
Waseca	1	-	-	-	5	73	36	115
White Rose	-	-	20	-	-	-	46	66
Others	51	38	49	20	1	217	59	436
Total	26,375	529	13,734	4,819	1,078	3,383	3,021	52,939
1959 Crop	26,336	532	14,762	4,386	1,239	3,774	2,570	53,599

Table 2. Seed Potato Certification
Summary of Fields and Acres Entered and Passed - 1960

Prov.	FIELDS Entered	FIELDS Passed	Percent Passed	ACRES Entered	ACRES Passed	Percent Passed
P.E.I.	4,952	4,381	88.5	26,375	23,093	87.5
N.S.	287	246	86.0	529	438	82.5
N.B.	1,789	1,534	85.7	13,734	11,274	82.8
Que.	1,131	650	57.5	4,819	2,692	55.8
Ont.	479	345	72.0	1,078	701	65.0
Man.	112	94	84.0	1,169	1,033	88.3
Sask.	93	68	73.1	367	278	74.1
Alta.	253	223	88.1	1,847	1,547	83.7
B.C.	512	374	73.0	3,021	2,077	68.7
Totals	9,608	7,915	82.3	52,939	43,133	81.8
1959	10,076	8,488	84.2	53,598	43,462	81.0
1958	11,251	9,669	85.9	58,855	49,472	84.0
1957	11,417	9,879	86.5	57,617	48,588	84.2
1956	11,440	9,575	83.3	53,926	44,398	82.1

Table 3. Seed Potato Certification
Fields Rejected on Field Inspection - 1960

Prov.	Leaf Roll	Mosaic	Bacterial Ring Rot	Blackleg	Wilts	Adjacent Diseased Fields	Misc.	Total
P.E.I.	11	102	2	114	22	28	294	575
N.S.	3	9	3	-	-	16	9	40
N.B.	-	63	100	4	-	50	32	249
Que.	10	124	159	42	-	103	43	481
Ont.	55	11	6	10	23	-	27	132
Man.	1	-	5	6	1	2	4	19
Sask.	-	-	6	1	-	17	1	25
Alta.	-	-	1	6	-	1	5	13
B.C.	81	-	6	3	1	-	47	138
Total	161	309	288	186	47	217	462	1,670

passed as Foundation and Certified seed were close to the 1959 totals. The virus diseases, leaf roll and mosaic, were responsible for the greatest number of rejections, followed by bacterial ring rot and black leg. The incidence of mosaic increased sharply in Eastern Canada (D.W. Creelman).

EARLY BLIGHT (Alternaria solani) was generally light in B.C. with the greatest amount occurring in the Interior (N. Mayers). It was found on most seed crops of Warba and Netted Gem in n. Alta. (E.C. Reid), caused considerable defoliation in Edmonton gardens (W.P. Campbell), and was widespread as tr. infections in s. Alta. (R.P. Stogryn, F.R. Harper). It was generally light in Sask. (A. Charlebois) and in Man. (D.J. Petty). It was fairly heavy in several fields in the s.-w. part of the Red River Valley, Man. (B. Peturson). Early blight infections were negligible in Ont. (D.J.P., H.W. Whiteside, C.B. Scott, F.J. Hudson, E.H. Peters). It was rated 109-sl. 15-mod./1,131 fields in Que. mainly in the Chicoutimi and Lake St. John districts (B. Baribeau). Norland and the Fredericton selection F52100 were severely affected in contrast to sl. infections on Norgleam, Fundy and other Fredericton selections at Deschambault, Que. Green Mountain showed resistance when compared with others at L'Assomption and most varieties and selections had sl.-mod. infections at Ste. Foy, Que. (H. Genereux). Incidence was lower than normal in N. B. (C.E. Robinson) and it was reported as 15-sl.2-mod/287 fields in N.S. (R.C. Layton). It was generally light in P.E.I. but a heavy infection was recorded in a garden at Charlottetown, (G.C. Ramsey, J.E. Campbell). A mod. infection was seen at Bay Roberts, Nfld. (O.A. Olsen).

GRAY MOLD (Botrytis cinerea) caused a trace of stem blight and wilt at Ste. Foy, Que. (D. Leblond). It also caused a tuber rot in the variety Pontiac in storage at Grand Falls, N.B. The rot was of a slightly watery, flabby nature and was confined to the stem-end of the tubers. Sclerotia were visible on the surface (K.M. Graham). Stem bases of the variety Avon were attacked at Charlottetown, P.E.I. (J.E.C.).

BLACK DOT (Colletotrichum coccodes (Wallr.) Hughes = C. atramentarium (Berk. & Br.) Taubenh.) was sl.-mod. on Norland at Ste. Anne de la Pocatiere, Que. Irish Cobbler, Warba and Teton were less severely attacked (H.G.). Infection was 100% on Keswick at Kentville, N.S. (K.A. Harrison). It was observed on underground stem portions and stolons, especially on early varieties after maturity, in Queens Co., P.E.I. (J.E.C.)

BACTERIAL RING ROT (Corynebacterium sepedonicum) was found in one seed crop at Grand Forks (N.M.) and as sl.-sev. infections in 7 table stock crops at Smithers, B.C. (W.R. Foster). It was found in only 1 crop of Waseca in s. Alta. (R.P. Stogryn), and in 6/93 fields inspected in Sask. where it appears to be on the increase (A.C.). Five fields were found infected in Man. and 1 in n.-w. Ont. (D.J.P.). It was present in 2/183 fields in the Barrie, Ont. district (H.W.W.). Of 136 suspect specimens submitted to O.A.C. Guelph, Ont., 105 were positive for ring rot (J.A. Carpenter). In Que., 159/1,131 fields were infected, considerably fewer than in 1959 (B.B.).

One hundred /1,789 fields were found infected in N.B. representing a slight decrease from the 1959 level (C.E.R.). Ring rot was found in 3/287 seed fields in N.S. (R.C.L.), and in 2/4,952 fields in P.E.I. (G.C.R.). Forty positive cases of ring rot were diagnosed at the Charlottetown, P.E.I. laboratory in the first 11 months of 1960 (J.E.C.). Ring rot affected 10% of the tubers of Arran Victory in storage at Doyles, Nfld. (O.A.O.).

BLACK LEG (Erwinia atroseptica). There was an increase in the incidence of this disease in the Lower Fraser Valley, B.C. in 1960 (N.M.). It continues to be the most serious disease in seed crops in n.- and c. Alta. (E.C.R.) and it was found in 143/174 fields in s. Alta. (R.P.S.). In Sask. it was found in 24/93 fields inspected (A.C.) and in Man. 6 seed fields were rejected (D.J.P.). Black leg was found in 45% of the fields inspected in n.-w. Ont. (D.J.P.), was considerably less than in recent years in the Barrie, Ont. district (H.W.W.); caused the rejection of 1 field in the Guelph, Ont. district (C.B.S.); appeared to be on the increase in s.-w. Ont. (F.J.H.), and was tr. in 18/136 fields in e. Ont. (E.H.P.). It was less serious in Que. than in 1959 but was present in 503/1,131 fields and caused the rejection of 42 (B.B.). Incidence was very low in N.B. although tr. amounts were found in one-third of the fields inspected (C.E.R.). It was found in 68/287 fields in N.S. but no fields were rejected (R.C.L.). It was rated 1,579-sl. 998-mod. 82-sev./4,952 fields in P.E.I. (G.C.R.). Fundy, Keswick and Sebago were quite susceptible in P.E.I. while Katahdin, Kennebec and Netted Gem were fairly resistant (J.E.C.). Sl. infections were seen at St. John's West and in the Conception Bay area of Nfld. (O.A.O.).

SOFT ROT (Erwinia carotovora). There was a 100% increase in the incidence of soft rot in the B.C. Interior and it was also of consequence in the Lower Mainland (N.M.). It was present, after digging, in Norgleam and Katahdin but not in Irish Cobbler or Sebago in the Thedford Marsh, Ont. (J.R. Chard). About 5% of the tubers of Kennebeck were affected in storage at Hillaton, N.S. (K.A. Harrison).

DRY ROT (Fusarium spp.) Infected specimens were received from Winnipeg, Man. (J.E. Scannell, D.W.C.). It was found in a few bins in e. Ont. Two lots of Warba were affected following digger injury and bruising (E.H.P.). Nine lots of Keswick were found with up to 3% dry rot in Que. (B.B.). Several instances of dry rot were encountered in Quebec City markets (D.L.). One lot of Sebago was 65% infected in May at Kentville, N.S. (K.A.H.). Dry rot reached serious proportions in Sebago in western P.E.I. in Nov. with some storages showing as high as 50% dry rot. A considerable tonnage of both seed and table stock potatoes were affected. Early digging in warm weather, bruising, and exceptionally warm weather conditions during storage were jointly responsible. It is hoped to have a more complete report of this serious outbreak for a later number of the Survey (D.W.C.).

WILT (Fusarium oxysporum f. tuberosi). Twelve-15% of a planting of Norgleam at Mount Stewart, P.E.I. showed a true wilt including a vascular

browning that extended halfway up the plant. There was no dry rot of the stalks. The pathogen was isolated and identified by W.L. Gordon. In contrast to Verticillium wilt, which appears in late summer and often involves only one side of the plant, these affected plants began to wilt in mid-July and the whole plant was uniformly infected. The same organism was isolated at Bedeque from Irish Cobblers which showed symptoms similar to purple top wilt except for the absence of nodal thickening and aerial tubers. The stems below ground showed vascular discoloration (J.E.C., D.B. Robinson).

WILTS (Fusarium spp., Verticillium albo-atrum) were tr. in the Okanagan Valley, B.C. and sev. in 1 field of Norland in the Lower Fraser Valley (N.M.). They were tr. in both n.-and s. Alta. (E.C.R., R.P.S.). Eight % of the fields examined in Sask. had sl. infections (A.C.). One field was rejected in Man. (D.J.P.). Wilts increased in prevalence in the Barrie (H.W.W.), and in the Guelph, Ont. districts (C.B.S.). Most varieties were affected in s.-w. Ont. (F.J.H.) and wilts were found in 23/136 fields in e. Ont. and caused the rejection of 6 (E.H.P.). Kennebec was the variety most affected in Que. but losses were negligible (B.B.). Wilts were of relatively minor importance in N.B., occurring in tr. amounts in 58/1,789 fields (C.E.R.). In N.S., wilts were reported in 45/287 fields and caused the rejection of one field of Fundy, a variety which appears highly susceptible (R.C.L.). More P.E.I. fields had a higher incidence of wilt in 1960 than in 1959. Twenty-two seed fields were rejected (G.C.R.).

SILVER SCURF (Helminthosporium atrovirens) was seen in the Barrie, Ont. district, especially on the smooth, thin-skinned varieties Chippewa and Irish Cobbler (H.W.W.). Infection was light at Ste. Anne de la Pocatiere, Ste. Foy and Ste. Clothilde and some tubers were sev. infected at L'Assomption, Que. (H.G.). It was observed on some varieties in plots at Kentville, N.S. (R.C.L.).

RHIZOCTONIA (Pellicularia filamentosa) was rated as 257-sl. 139-mod. 14-sev./512 fields in B.C. Financial losses were incurred through downgrading of tubers (N.M.). It was present in all fields in n. Alta. (E.C.R.) and in most fields in s. Alta., where Netted Gem showed the highest incidence (R.P.S.). It was of minor importance in Sask. (A.C.) and in Man. and n.-w. Ont. (D.J.P.). Incidence is increasing in the Barrie, Ont. district (H.W.W.); it was very prevalent in s.-w. Ont. (F.J.H.); and it was 29-sl. 2-mod./136 fields in e. Ont. where it was more prevalent on sandy soils (E.H.P.). It was present in 166/1,131 fields and in 288 bin lots inspected in Que., up sharply from 1959 (B.B.). Levels of incidence were normal in N.B. and losses were negligible (C.E.R.). Slight infections were general in Kings Co., N.S. (R.C.L.). Mod. infections occurred in the Avalon Peninsula, Nfld. (O.A.O.).

PINK ROT (Phytophthora erythroseptica). Infected tubers were received from a Quebec City, Que. market (D.L.).

LATE BLIGHT (Phytophthora infestans) was of consequence only in the Lower Mainland area of B.C. (N.M.). Traces were recorded in n.-w. Ont. (D.J.P.) and in the Barrie, Ont. district (H.W.W.). Only one sev. infection was seen in the Guelph, Ont. area (C.B.S.) and a very light infection occurred on Irish Cobbler in the Grand Bend Marsh (J.R.C.). It was 12-sl. 2-mod./136 fields in e. Ont. (E.H.P.) It was rated 175-sl. 36-mod. 7-sev./1,131 Que. fields and caused the rejection of four. Dry weather generally kept the disease in check (B.B.). Although late blight was reported early in N.B., local infections only developed and the disease did not cause any damage (S.F. Clarkson). A similar situation prevailed in N.S. (R.C.L., K.A.H.) and in P.E.I. (G.C.R.). A heavy infection was seen on Irish Cobbler at Salmonier on the s.-w. part of the Avalon Peninsula, Nfld. and sl. infections occurred at Musgravetown on Bonavista Bay and in the Conception Bay areas (O.A.O.).

LEAK (Pythium ultimum) was troublesome in all areas in the B.C. Interior and was found in tr. amounts in the Lower Fraser Valley, B.C. (N.M.). Two cases were seen in Sask. (R.J. Ledingham). Disease incidence, after 2 weeks in storage, of tubers grown in sandy soil at Ste. Anne de la Pocatiere, Que. was as follows: Green Mountain, 5.4%; Warba, 5.2%; Early Rose, 2.5%; Bintje, 2.2%; Keswick, 2.0%; Irish Cobbler, 1.2%. A light infection was also seen in a 5-acre field on loam (H.G.). Many lots throughout N.S. were affected. The organism was isolated from Keswick, Sebago and Green Mountain (R.C.L., K.A.H.). Five-7% of the tubers of F-5350 were affected after two weeks of storage at Charlottetown, P.E.I. (J.E.C.).

SCLEROTINIA ROT (S. sclerotiorum). Specimens were received from storage at Forestville, Que. (D.L.).

POWDERY SCAB (Spongospora subterranea). Two very sev. cases were reported at harvest in the Chicoutimi, Que. area. Infections were 25 and 70%. A few sl. infections were found elsewhere at bin inspection (B.B.). Mod. infections were seen on Kennebec at St. Germain and on Green Mountain in a 5-acre field in the Lake St. John district (H.G.). Some heavy infections were reported from the Scotts Bay district in N.S. (R.C.L.). Light to mod. infections were seen on several varieties at St. John's West, Nfld. (O.A.O.).

COMMON SCAB (Streptomyces scabies) was present on all white-skinned varieties in the B.C. Interior (N.M.). It was a serious problem on Warba in n. Alta. and caused the rejection of most crops of this variety (E.C.R.) but was not serious in s. Alta. (R.P.S.). It was sev. on a farm at Cando, Sask. (T.C. Vanterpool). Scab was sev. in a field of Early Ohio nr. Winnipeg, Man. and sl.-mod on this variety and Warba elsewhere in Man. (D.J.P.). Crops in n. Simcoe Co., Ont. showed a high level of pitted scab (H.W.W.); sl. infections were general in s.-w. Ont. (F.J.H.); and in Ontario and Durham counties on white-skinned varieties (E.H.P.). It was rated 386-sl. 16-mod. 4-sev./1,131 Que. fields, about the same

level as in 1959 (B.B.). Levels in N.B. were at about the 1959 level (C.E.R.). Slight amounts were seen in seed stocks in N.S. but there were reports of some sev. infections in table stock (R.C.L.). Scab was very heavy at Brigus, Nfld. and was more prevalent than usual throughout the Avalon Peninsula (O.A.O.).

WART (Synchytrium endobioticum) was generally light in the Avalon Peninsula, Nfld., probably because of the dry summer. Only a few sev. infections were seen (O.A.O.).

LEAF ROLL (virus) incidence was at about the same level in Canada as in 1959, and a considerable drop in the level of incidence in B.C. was offset by a sharp rise in the number of fields affected in eastern Canada, notably in Ontario. A few representative reports are given below (D.W. Creelman).

Seventy-five of the 81 fields rejected because of leaf roll in B.C. were in the Lower Fraser Valley. (N.M.). It was found on one-third of the fields inspected in n. Alta. (E.C.R.) and in 46/174 s. Alta. fields (R.P.S.). In Sask., 45% of the inspected fields were affected (A.C.), and it was tr. in Man. and n.-w. Ont. (D.J.P.). It was the most significant disease problem in the Barrie, Ont. district where Huron and Sebago were the varieties most affected (H.W.W.). Ten/24 fields inspected in the Guelph, Ont. district were rejected (C.B.S.), and it showed a definite increase in s.-w. Ont. (F.J.H.). Late infection in e. Ont. produced necrosis in Netted Gem (E.H.P.). Its incidence in Que. and N.B. was at about the 1959 level (B.B., C.E.R.). An increase was noted in N.S., primarily in Kennebec and Netted Gem (R.C.L.), as well as in P.E.I. (G.C.R.).

MOSAIC (virus) was the largest single cause of rejections of seed fields in 1960; the number of fields rejected because of severe mosaic being about three and one-half times as great as in 1959. The increased incidence was in Que. and the Maritime Provinces (D.W.C.).

Incidence in B.C. was lower than in 1959 (N.M.). Traces of aucuba mosaic were seen in n. Alta. (E.C.R.), and incidence in s. Alta., 12/174 fields, was abnormally high for the area (R.P.S.). It was tr. in 19% of Sask. fields (A.C.) and in 1 field in Man. (D.J.P.). Three fields were rejected in the Barrie, Ont. district (H.W.W.); two in the Guelph district (C.B.S.); one in s.-w. Ont. (F.J.H.); and three in e. Ont. (E.H.P.). It caused the rejection of 124/1,131 fields in Que. compared with only 28 fields in 1959 (B.B.). Sixty-three fields were rejected in N.B., a six-fold increase over 1959. Green Mountain and Keswick were the principal varieties concerned (C.E.R.). Mosaic still continues to be the chief cause of rejection of seed fields in N.S. Its incidence in 1960 was double that in 1959 (R.C.L.). Rejections in P.E.I. in 1960 were 102 compared with 45 in 1959 (G.C.R.). It was sl. at Bay Roberts, Brigus and St. John's and mod. at Cartyville, Nfld. (O.A.O.).

PURPLE TOP WILT (virus) was seen in 13% of n. Alta. fields (E.C.R.) and in 16/174 fields in s. Alta. (R.P.S.). It was tr. in Sask.

(A.C.). and its incidence in the Barrie, Ont. district was much lower than in 1959 (H.W.W.). It was tr. in N.B. (C.E.R.) but far more prevalent in N.S. (R.C.L.). About 5-10% of Sebago plantings in P.E.I. were affected (G.C.R.).

SPINDLE TUBER (virus) was seen in 1 crop in n. Alta. (C.C.R.), and relatively high percentages were observed in 2 fields in s. Alta. (R.P.S.). It was definitely more prevalent in Sask., occurring in 10/93 inspected fields (A.C.), and was observed in Sebago and Huron in the Barrie, Ont. district (H.W.W.). Tr. amounts were seen in the Guelph, Ont. district (C.B.S.). It was sl. in 5 bin lots in Que. (B.B.). In N.B. it was observed in 115/1,789 fields and was responsible for the rejection of six (C.E.R.). Spindle tuber increased in incidence in N.S. in 1960, principally in Kennebec and Avon. Three fields of Avon were rejected and many fields of Kennebec failed to reach Foundation standards (R.C.L.). An increase was also noted in P.E.I. where 33 fields were rejected (G.C.R.). It was sl. on Arran Victory at Robinsons, Musgravetown and St. John's West, Nfld. (O.A.O.).

WITCHES BROOM (virus) reached its highest level in several years in the Cariboo district, B.C. where it appears to be endemic (N.M.). It was tr. in the Peers and Peace River districts of n. Alta. (E.C.R.) and in 1 field in s. Alta. (R.P.S.).

LITTLE LEAF (? genetic) was found in 219/4,952 fields inspected in P.E.I. (G.C.R.).

WILDING (? genetic) occurred in 159/4,952 P.E.I. fields (G.C.R.).

SPRAIN (physiologic) was more prevalent than usual in P.E.I. in 1960. Several lots, some containing as many as 10% infected tubers, have had to be regraded (G.C.R.).

STEM-END DISCOLORATION (non-parasitic) was sl. in 23/485 bin lots inspected in Que. (B.B.).

MAGNESIUM DEFICIENCY. Severe symptoms were seen in Arran Victory at Robinsons on the west coast of Nfld. (O.A.O.).

FROST INJURY was reported in 143/485 bin lots inspected in Que., mainly from late frosts in Oct. Losses were from 5-20% in some lots (B.B.).

RHUBARB

LEAF SPOT (Ascochyta rhei) was mod. in a planting nr. Charlottetown, P.E.I. (D.W. Creelman).

CROWN ROT (Rhizoctonia solani) killed 50% of the plants in a garden at Winnipeg, Man. (W.C. McDonald).

VEIN CLEARING (? virus). Two plants in a garden nr. Charlottetown, P.E.I. showed pronounced vein-clearing symptoms, accompanied by necrotic spotting (D.W.C.).

SPINACH

ASTER YELLOWS (virus). A one-quarter-acre field at Cole Harbor, N.S. was a complete loss. It was adjacent to a lettuce field which was 100% infected (K.A. Harrison) (C.P.D.S. 40:2. 99. 1960).

SQUASH

STORAGE ROT (Fusarium sp.). It was reported from Fredericton, N.S. in Mar. that losses in storage had occurred in the district. The rot, which caused a cheesy or watery breakdown, seemed to start at the blossom end or on the side of the fruit. A Fusarium sp. was the predominant isolate (D.W. Creelman).

LEAF SPOT (Septoria cucurbitacearum). Trace infections appeared on Buttercup squash at Kentville, N.S. but spread was checked by the dry weather conditions (K.A. Harrison).

ASTER YELLOWS (virus) caused extreme dwarfing of several plants in a large field, adjacent to severely affected carrots, at Hillaton, N.S. (K.A.H.).

SWEDE TURNIP

DOWNY MILDEW (Peronospora parasitica). Infected specimens were received from Milner, B.C. (H.N. W. Toms). Infection was sev. on Laurentian swedes in the Sydney, N.S. area (K.A. Harrison).

DRY ROT (Phoma lingam). Heavy incidence of dry rot caused the downgrading of a carload of swede turnips grown at Prince George, B.C. The lesions were not typical of dry rot but P. lingam was isolated (H.N.W.T., M.E. Elliott). It was tr. on Laurentian at Harbor Grace, Nfld. (O.A. Olsen).

CLUB ROOT (Plasmodiophora brassicae) was found in a low, damp area in a field on the Grand Bend Marsh, Ont. (J.R. Chard). Specimens were received from the Lake St. John district and from St. Edouard, Lotbiniere Co., Que. (D. Leblond). It severely affected 75% of the plants in a one-half-acre planting at Ste. Anne de la Pocatiere, Que. (R.O. Lachance). Club root was general on swedes in N.B. and caused complete loss of a 2-acre planting at Woodstock (S.R. Colpitts). Half of a 3-acre field of Laurentian swedes in the Sydney, N.S. district was 100% infected (K.A.H.). It was sev. at Colinet, Nfld. (O.A.O.).

WIRESTEM (Rhizoctonia solani) was sl. in a field in the Grand Bend Marsh, Ont. (J.R. C.).

SKIN ROT (Rhizoctonia solani) affected 5% of the roots in storage in March at Grand Pre, N.S. (K.A.H.).

SCAB (Streptomyces scabies) was tr. at Oromocto, N.B. (S.R.C.). It was present in a number of P.E.I. fields that had recently received an application of limestone. It was also enhanced by the use of soil insecticides for the control of root maggots (J.E. Campbell).

BROWN HEART (Boron deficiency) was seen in 25% of the roots at St. Joachin de Tourelle in the north Gaspé region, Que. (R.O.L.). Several growers in Kings Co., N.S. reported brown heart. Even a slight incidence represents a large loss as dealers will not buy roots from fields showing any degree of boron deficiency (K.A.H.). Severe brown heart occurred in a number of P.E.I. fields treated with fertilizer supposedly containing boron (3-15-6-B). There is evidence that the product was incorrectly labelled and contained no boron (J.E.C.).

SWEET CORN

SMUT (Ustilago maydis). Two specimens were received at Saskatoon, Sask. (R.J. Ledingham).

TOMATO

EARLY BLIGHT (Alternaria solani) caused sev. defoliation followed by stem-end rotting of fruits at Edmonton, Alta. (W.P.C.). Trace infections were seen in plots at Winnipeg, Man. (B. Peturson). Most tomato fields in Prince Edward Co., Ont. were infected, especially those under a short rotation. Where longer rotations are practised and fungicidal control used, the disease is of little consequence (B.E. Beeler). Early blight was general and in the tr.-10% range in N.B., but losses were small (S.R. Colpitts). Severe defoliation from early blight seriously reduced the late crop at Berwick, N.S. Some loss from fruit rot was incurred in the early crop (K.A. Harrison).

GRAY MOLD (Botrytis cinerea). Stem rot and calyx-end rot of fruits became serious in several spring and fall greenhouse crops in Essex Co., Ont. There was some evidence that maneb was not effective in controlling the disease (C.D. McKeen). Botrytis stem cankers killed 3-4% of the plants in a greenhouse at Kingston; a light leaf infection was observed in a greenhouse at Falmouth; and 18% fruit loss was recorded in unsprayed outdoor plots at Kentville, N.S. (K.A.H.).

GHOST SPOT (Botrytis cinerea and moisture beads). All fruits in a plastic greenhouse at St. David's, Ont. were affected. Ventilation in the house was poor. An application of maneb and increased ventilation corrected the trouble (J. Bradbury).

LEAF MOLD (Cladosporium fulvum) caused extensive damage in commercial greenhouses at Kelowna, B.C. (G.E. Woolliams). It also

caused much damage in several crops of susceptible varieties in s.-w. Ont. Control is difficult in plastic houses where humidity tends to remain higher than in conventional glass houses (C.D. McK.). Heavy infections were seen in 2 fields at Berwick, N.S. The plants in both fields were obtained from the same greenhouse where a spring crop of tomatoes was being produced. Infection was 100% on Tuck Queen at Grand Pre (K.A.H.).

ANTHRACNOSE (Colletotrichum coccodes (Wallr.) Hughes = C. atramentarium (Berk. & Br.) Taubenh.) (Hughes, S.J. Can. J. Botany 36: 764. 1958). Adequate spray programs, based on maneb, gave good control of anthracnose in canning crops in Essex and Kent counties, Ont. in 1960. Very dry weather conditions may have helped in keeping the level of inoculum low (C.D. McK.). Some shipments of tomatoes were rejected, because of anthracnose, at canneries in Prince Edward Co., Ont. (B.E.B.). Infection was sev. in plots at the Research Station, Kentville, N.S. (K.A.H.).

BACTERIAL CANKER (Corynebacterium michiganense). Infection was 25% in a commercial greenhouse at Kelowna, B.C. Little damage was seen in field-grown crops (G.E.W.). It was tr. in plots at Winnipeg, Man. (B.P.). It was found in 20/200 fields causing an average damage of 5-10% in Prince Edward Co., Ont. (B.E.B., J.A. Carpenter).

WILT (Fusarium oxysporum f. lycopersici) occurred in unsterilized greenhouse beds at Sydney, N.S. (K.A.H.).

LATE BLIGHT (Phytophthora infestans). For the third successive year, late blight appeared in varietal trial plots at U.B.C., Vancouver in Sept. Defoliation was light but 80-100% of the fruits bore lesions by the end of the month (H.N.W. Toms). About 20% defoliation occurred in a small sprinkler-irrigated planting at St. Catharines, Ont. There were also several severe outbreaks in unprotected plantings in the Niagara Peninsula (J.B.). For the first time in a great many years, no late blight was seen or reported in Nova Scotia (K.A.H.). It was tr. at St. John's West, Nfld. (O.A. Olsen).

NEMATODES (Pratylenchus penetrans). A field on sandy soil at Harrow, Ont. was heavily infested with 3600 nematodes per gram of root and another at Leamington, in which growth was poor, yielded more than 8,000 per gram of root (W.B. Mountain, R.M. Sayre).

BACTERIAL SPECK (Pseudomonas tomato). Damage ranged from slight-35% in 80/200 fields examined in Prince Edward Co., Ont. Copper sprays gave some measure of control (B.E.B., J.A.C.). Specimens were received from St. Pierre les Becquets, Nicolet Co., Que. (D. Leblond).

SCLEROTINIA WILT AND ROT (S. sclerotiorum). A heavy outbreak occurred in experimental plots at Kentville, N.S. after irrigation in August. Fifteen per cent of the stalks were rotted. A 1% infection was seen in a greenhouse at Kingston in March (K.A.H.). A tr. of wilt was seen in a market garden nr. Charlottetown, P.E.I. in July (D.W. Creelman).

LEAF SPOT (Septoria lycopersici). Trace infections were seen in plots at Winnipeg, Man. (B.P.). Regular fungicide programs in recent years have reduced the incidence of this disease in the early basket crops to a low level in s.-w. Ont. (C.D. McK.).

WILT (Verticillium spp.). Infection by V. dahliae occured in a number of commercial greenhouses in the B.C. Interior and in some cases was as high as 50%. It was found in most irrigated fields but its incidence was not as great as in previous years and little damage was incurred (G.E.W.). V. albo-atrum caused wilt in most fields planted for the early basket trade in the Harrow-Leamington, Ont. area. Losses were variable (C.D. McK.). At Grand Pre, N.S., 25% of the plants in a small greenhouse were infected by V. albo-atrum (K.A.H.).

BACTERIAL SPOT (Xanthomonas vesicatoria) was found in several canning crops in Essex and Kent counties, Ont. Untreated, contaminated seed proved to be the source of infection (C.D. McK.). Damage ranged from sl.-50% in 80/200 fields examined in Prince Edward Co., Ont. This disease is increasing in importance in the area each year. Seed contamination is the source of infection (B.E.B., J.A.C.). Infection was rated at 5% in a field of Bounty at Ste. Anne de la Pocatiere, Que. (L.J. Coulombe).

BLOTCHY RIPENING (? virus) was quite prevalent in a commercial greenhouse at Kelowna, B.C. (G.E.W.). It was found in many fields in Prince Edward Co., Ont. The first few trusses were the most seriously affected. Weather conditions may have been partially responsible (B.E.B.).

BROWN WALL (tobacco mosaic virus) affected a few greenhouse and field crops in s.-w. Ont. The greenhouse forcing variety Vinequeen has been found to be more susceptible than others (C.D. McK.).

CURLY TOP (virus). One affected plant was found in an experimental plot at Ste. Clothilde, Que. It was reported that curly top was found in several fields north of Montreal (R. Crête).

DOUBLE VIRUS STREAK (virus). Infection was about 20% in a 1/2-acre field at St. David's, Ont. and in other areas in the Niagara Peninsula (J.B.).

FERN LEAF (virus) was seen on specimens received from Asbestos, Que. (D.L.).

MOSAIC (virus) was found in both greenhouse and field crops in the Okanagan Valley, B.C. (G.E.W.). Most fall crops of greenhouse tomatoes in s.-w. Ont. carried a serious infection. The productivity of many spring crops was also reduced (C.D. McK.). A spring greenhouse crop at Grand Pre, N.S. was 100% affected (K.A.H.).

PURPLE TOP (virus). Infections up to 5% were observed in Kings Co., N.S. (K.A.H.) (C.P.D.S. 40:2. 99. 1960).

BLOSSOM-END ROT (physiological) was seen in both greenhouse and field crops in most sections of the B.C. Interior (G.E.W.). It occurred in a number of garden plantings at Lethbridge, Alta. in late July and early Aug. (P.E. Blakely, F.R. Harper). Damage was mod. at Saskatoon, Sask. where this disorder appears to be the most important tomato trouble (R.J. Ledingham). It was observed in tr. amounts in and around Winnipeg, Man. and was much less prevalent than usual (B.P.). Blossom-end rot was widespread in Kamouraska and L'Islet counties, Que. Damage was as high as 50% and averaged 20% (L.J.C.). It was tr.-5% at Oromocto, N.B. (S.R.C.) and affected about 15% of the fruits in a garden in Queens Co., P.E.I. (J.E.C.).

CATFACE (poor pollination). A considerable amount occurred in the first set of the WR-7 variety in the spring greenhouse crop in s.-w. Ont. This condition appears to be an undesirable characteristic of the variety (C.D. McK.). It was sl. and not as prevalent as in previous years in Sunbury Co., N.B. (S.R.C.).

SUNSCALD was sl. at Ste. Foy, Que. (D.L.).

IV. DISEASES OF FRUIT CROPS

A. POME FRUITS

APPLE

FRUIT MOLD (Alternaria mali) was tr. on McIntosh fruit at Ange Gardien, Que. (D. Leblond).

FIRE BLIGHT (Erwinia amylovora) was prevalent on apples and crabapples in the Edmonton, Alta. district in the spring of 1960 (W.P. Campbell), and on crabapples at Lethbridge, Alta. (F.R. Harper). Specimens were seen from Waldheim, Sask. (T.C. Vanterpool). Scattered infections were noted in late June at the Exp. Farm, Morden, Man. near a previously known, and pruned out, center of infection. Thirty-one/103 trees examined in mid-July in the University orchard, Fort Garry, Man. were infected (W.A.F. Hagborg). It was mod.-sev. on Greening at Simcoe, Ont. (G.C. Chamberlain); slight damage occurred in a previously infected orchard nr. Lucknow, Ont. Two sprays of Agri-Strep during bloom appeared to give some control. Affected varieties, in apparent order of susceptibility, were: Alexander, King, Tolman Sweet, Northern Spy, Snow and McIntosh (J.R. Chard). Scattered infections were seen in 2 large orchards at Rougemont, Que. It appears to be on the increase in s.-w. Que. (D.W. Creelman, L. Cinq-Mars).

CANKER (Gloeosporium spp.) was sl. on nursery stock at Kelowna, B.C. The symptoms resemble those of perennial canker, but development is much more rapid (L.E. Lopatecki).

STORAGE ROT (Glomerella cingulata). Affected specimens were submitted to the Kentville, N.S. laboratory (C.L. Lockhart).

RUST (Gynosporangium globosum) was found on 200/250 trees examined in Prince Edward Co., Ont., infections ranging from sl.-10%. Ferbam sprays applied during the bloom period gave good control (B.E. Beeler). Specimens bearing heavy infections of pycnia on the upper surface of leaves were received from St. Jerome, Que. (D.L.).

CANKER (Nectria spp.). N. cinnabarina was identified on specimens of Spy and Wagener from Canard and N. galligena was found on Cortland at Cambridge, N.S. (C.L.L.).

PERENNIAL CANKER (Neofabraea perennans) affected 2-3% of two-year old nursery stock at Kelowna, B.C. Perennial canker and bull's-eye rot are on the increase in wetter areas of the Okanagan Valley (L.E.L.). Populations of the woolly aphis, associated with the disease, are increasing in the Okanagan Valley (W.R. Foster).

STORAGE ROT (Penicillium spp.). Loss of McIntosh and Cortland in cold storage at Fredericton was about 2% in February (S.R. Colpitts).

CANKER AND STORAGE ROT (Pezicula alba Guthrie = Gloeosporium album Osterw.). The Gloeosporium stage was found in cankers on 100% of 20-year old McIntosh trees in an orchard at Rockland, N.S. This orchard was under high nitrogen fertilization with hen-house litter. Another 20-year old block was 20% infected. It was also found sporulating on mummified, overwintered fruits at Kentville, N.S. Lenticel infections, yielding G. album affected 97% of the fruit of one lot of Northern Spy in storage at Kentville (C.L.L.). E.J. Guthrie, Trans. Brit. Mycol. Soc. 42: 502-506, 1959 described Pezicula alba n. sp. as the perfect stage of Gloesporium album. The canker phase of this disease has not been previously reported to the Survey. See also Ross and Lockhart (Can. Plant Dis. Survey 40: 10-14. 1960) (D.W.C.).

COLLAR ROT (Phytophthora cactorum) girdled and killed isolated trees on E.M. VII and MM 106 rootstocks in several orchards at Summerland, B.C. (D.L. McIntosh). The dwarfing rootstocks, E.M. II and E.M. VII were frequently found affected (W.R.F.).

POWDERY MILDEW (Podosphaera leucotricha) was found, mainly on terminal growth, in most orchards in the B.C. Interior. Very little fruit infection was seen. Affected varieties were McIntosh, Delicious, Jonathan, Newtown and Winesap (D.L. McI.). Its incidence in the Okanagan Valley was the highest since 1955 (W.R.F.). Light infections were reported on McIntosh in Niagara Peninsula, Ont. orchards (G.C.C.). It was well controlled by sulfur sprays in Eastern Ont. (B.E.B.).

CALYX-END ROT (Sclerotinia sclerotiorum). Trace infections only were found on McIntosh, Red Rome Beauty and Gravenstein in N.S. orchards (J.F. Hockey).

CANKER (Valsa leucostoma). The Cytospora stage was found on mummified fruit of Cortland and on branches of other varieties in a frost-damaged orchard at Farnham, Que. (D.L.).

SCAB (Venturia inaequalis). Many enquiries and specimens were received at Vancouver, B.C. from home gardeners. A few cases of severe defoliation were reported (H.N.W. Toms). Pin-point or storage scab occurred at various localities in the Okanagan and Kootenay districts in B.C. Late-August rains favored infection (D.L. McI.). Several early-season infection periods occurred in Essex Co., Ont. and unsprayed trees were heavily infected. However, most commercial orchards, which were properly sprayed, suffered negligible losses (J. Cutcliffe). Unsprayed McIntosh at St. Catharines, Ont. were 100% infected (G.C.C.). Most orchards in s.-w. Que. were free of scab. One sev. infected orchard of large, closely planted trees was seen at Rougemont (D.W.C., (L.C.-M.) Seven infection periods were recorded at Farnham, Que. between 8 May and 18 June. Only where fungicide applications were poorly timed did any appreciable infection occur. Some pin-point scab developed at the end of the season (R. Desmarteau). Properly sprayed orchards in Kamouraska Co., Que. had little scab, although sev. infections were seen at St. Pacôme,

St. Pascal, Riviere Ouelle and St. Denis (L.J. Coulombe). Scab was generally well controlled in the St. John River valley in N.B. despite several heavy infection periods in May. Weather conditions in July, Aug. and Sept. were unfavorable for secondary infections (S.R.C.). Apple scab was not a serious problem in N.S. in 1960 and most growers obtained excellent control. Infection periods at Kentville were fairly numerous during May (3-heavy) and June (6-mod. or heavy, 3-slight) but July and August were very dry and no late scab was found. The first infection period occurred May 9-10 and the first lesions were observed on 26 May (R.G. Ross). Light to moderate infections were seen, late in the season, in P.E.I. (J.E. Campbell). Sl. infections developed at St. John's West, Nfld. (O.A. Olsen).

FRUIT BLOTCH (? virus) was found in all Stayman orchards inspected in various parts of B.C., ranging from a few to 50% of the trees. The symptoms, fruit blotching, russetting and distortion which cause down-grading and culling of fruit were unusually sev. in 1960 and there was good correlation with leaf pucker occurrence. Considerable evidence of natural spread has been accumulated and there has been one probable experimental transmission (M.F. Welsh).

LEAF PUCKER (virus) with associated fruit symptoms, was found in 9 McIntosh trees in 4 orchards at Summerland, Rutland, Glenmore and Cawston in the Okanagan Valley, B.C. Symptoms on leaves and fruit were more severe than in any of the 6 seasons previously recorded. The characteristic shallow fruit pitting was often accompanied by ring russetting and fruit distortion, causing reduction in grade and culling. One tree was found with leaf symptoms but with normal fruits (M.F.W.).

RING RUSSETTING (? virus) was present in all Newtown orchards inspected in the south Okanagan Valley, B.C. Orchards had from a few to 50% infected trees at Oliver, Penticton, Kaleden, Naramata, Cawston, Summerland and Kelowna. It was also reported from the northern parts of the Valley. Symptom expression on leaves was complicated by the common occurrence of Mg deficiency on Newtown. Heavy russetting of the entire crop was common. A similiar condition, accompanied by leaf flecking, was seen on 2 trees of McIntosh at Summerland, and Penticton (M.F.W.).

MOSAIC (virus) was seen on Tolman Sweet, McIntosh and Northern Spy in the Georgian Bay region of Ont. (R.S. Willison, W. Fox). It occurred on Wealthy at Rougemont, Que. in the same orchard from which it was first reported from the province in 1959 (D.W.C., L.C.-M.).

MINERAL DEFICIENCIES. Deficiencies of boron, magnesium, zinc and manganese were more prevalent in the Okanagan Valley, B.C. than in recent seasons. Mg deficiency on Newtown was especially common. The hot, dry season may have intensified symptoms (M.F.W.). Mg deficiency was very prevalent in e. Ont. (B.E.B.), and in all districts of s.-w. Que. (R. Desmarteau). Boron deficiency was observed on Melba at Blomidon, N.S. (R.G.R.).

JONATHAN SPOT (non-parasitic) was sl.-mod. on Wealthy and Wolf River at Ste. Famille, Ile Orleans, Que. (D.L.).

SCALD (non-parasitic) was sl.-sev. on stored apples at Quebec City, St. Hilaire and Three Rivers, Que. between Feb. and April (D.L.). A 60% loss of Cortland apples stored in barrels was experienced at Fredericton, N.B. in Feb. Air circulation was poor (S.R.C.).

SILVER LEAF (cause undetermined) affected 3 trees in a large orchard at Abbotsford, Que. One tree was sev. affected with accompanying fruit symptoms consisting of a watersoaked appearance of the fruit surface. The owner stated that the tree bore a high percentage of watercore fruit in 1959 (D.W.C., L. C.-M.).

SOGGY BREAKDOWN (non-parasitic) was encountered in retail markets in Quebec City in Feb. and March (D.L.).

CHEMICAL INJURY. Tips of young shoots were affected in a home garden at Vancouver, B.C. after the lawn was treated with 2,4-D (H.N.W.T.). An improperly mixed application of mercury, glyodin and captan caused sev. foliage burn, fruit russetting and fruit drop at St. Stephen, N.B. (S.R.C.).

WINTER INJURY. Evidence of winter injury incurred in the 3 previous severe winters is widespread in s.-w. Que. Low-lying areas were the most affected, but damage was seen everywhere (D.W.C., L. C.-M.); extensive injury was also seen at Deschambault and on Ile Orleans, Que. Many trees were completely killed (D.W.C., D.L.). Trees in the Oromocto - Fredericton area of N.B. continue to die from the effects of the severe 1958-59 winter. The hot, dry summer of 1960 eliminated many trees which were in a weakened condition (S.R.C.).

PEAR

FIREBLIGHT (Erwinia amylovora) was at its lowest ebb in many years in the Okanagan Valley, B.C. Slight, late-season infections were seen on Bartlett at West Summerland and Naramata (L.E. Lopatecki). It was reported from Lake Lenore, Sask. (T.C. Vanterpool). Fireblight occurred, shortly after bloom, for the third consecutive year, in a 7-acre block of Bartlett and Gorham in Colchester South Twp. in Ont. Despite prompt pruning, the disease persisted throughout the summer, necessitating a heavy cutting back of many trees (J. Cutcliffe). In was sev. on 6/8 trees of Flemish Beauty in the laboratory orchard at St. Catharines (G.C. Chamberlain); it was 1-sl. 1-sev./3 orchards at Arkona and sev. in an orchard nr. Goderich, Ont. Barlett, Bosc, Anjou and Clapp's Favorite were affected. No infection was found on Kieffer (J.R. Chard).

CANKER (Myxosporium corticola) killed a large branch on a tree at Sannichton, B.C. (R.G. Atkinson, W.R. Orchard).

ROOTLET INFECTION (Phytophthora cactorum). Feeding rootlets collected from trees in good vigor at Summerland, B.C. from soil known to be infested with P. cactorum showed a high degree of infection with this organism (D.L. McIntosh).

POWDERY MILDEW (Podosphaera leucotricha) affected a small percentage of fruits in several orchards in various districts in the B.C. Interior (D.L. McI.).

BLAST (Pseudomonas syringae). A heavy infection occurred in a 10-acre block of Bartlett in Essex Co., Ont. Within 3 weeks most terminals were affected and a rigorous pruning program throughout the summer resulted in the removal of over 50% of the bearing wood. Infections of 60-70% were reported in widely separated orchards in the Harrow and Leamington areas. Mod.-sev. damage was also observed in the Collingwood, Ont. district where the disease seems well established and is of prime concern to the growers who are experiencing considerable difficulty with control (J. Cutcliffe, J.A. Carpenter). The only other report to the Survey, of this disease, is one by W.E. McKeen from the Saanich Peninsula, B.C. (C.P.D.S. 34: 109-110. 1955). (D.W. Creelman).

SCAB (Venturia pirina) was sev. on Bartlett at Nakusp in the Arrow Lakes district of B.C. (M.F. Welsh). It caused 100% loss of fruits in a 1-acre planting of Bartlett at Binbrook, Ont. In plots of Flemish Beauty at St. Catharines it was 85% on unsprayed trees, 33% on glyodin-sprayed and 20% on Niacide-M-sprayed trees (G.C.C.). Severe damage was recorded in an orchard at Granby, Que. (D.W. Creelman, L. Cinq-Mars). A few trees showed an average 3% infection at Burtts Corner, York Co., N.B. (S.R. Colpitts). In 1959 and 1960 a pear grower at Bridgetown, N.S. had great difficulty in controlling scab. In 1960, an examination of the previous year's wood revealed many overwintering lesions which contained viable conidia of V. pirina. Similiar conditions were found in an orchard at Gaspereaux, N.S. This is the first report of pear scab overwintering on the wood in Nova Scotia (R.G. Ross).

FRECKLE PIT (? virus) was seen on 50 trees of d'Anjou in the Okanagan and Similkameen Valleys in B.C. This condition, not previously recognized, differs from virus pit and the two forms of cork spot reported on d'Anjou in 1959 (C.P.D.S. 39: 71-72. 1960). Orchard records show that it recurrs in the same trees in successive seasons and causes a reduction in fruit grade (M.F.W.).

SLOW DECLINE (cause unknown). Many pear trees in the Okanagan Valley, B.C. have declined in vigor and productivity progressively over a period of years (D.L. McI.).

SUDDEN DECLINE (cause unknown) of pear trees occurs frequently in B.C. orchards. Trees wilt and die suddenly just before harvest. Only a few trees in any orchard are affected in any one season. Symptoms usually

appear in August on trees that were apparently healthy until the onset of wilting (D.L. McI.).

B. STONE FRUITS

APRICOT

CORYNEUM BLIGHT (Stigmina carpophila Lev.) M.B. Ellis = Clasterosporium carpophilum) (Lev.) Aderh.) (see C.M.I. Mycological Paper 72: 56. 1959) affected a small percentage of fruits in several orchards in the B.C. Interior (D.L. McIntosh). It was sev. at Creston, B.C. (W.R. Foster). Infection was heavy on unsprayed trees of Reliable at Harrow, Ont. No infection was seen on Early Orange (C.D. McKeen).

WILT (Verticillium dahliae) occurred in several orchards in the vicinity of Summerland, B.C. (G.E. Wooliams).

RING POX (virus) continues to spread slowly in the Okanagan and Similkameen Valleys, B.C. New infections appear both adjacent to and far from existing infections. Two forms of spread and possibly two vectors are indicated (T.B. Lott, F.W.L. Keane).

CHERRY

CORYNEUM BLIGHT (Stigmina carpophila). Incidence was high in the Fraser Valley of B.C. (W.R. Foster).

BLACK KNOT (Dibotryon morbosum). Black knot was found on cherries on the U. of Man. campus, Winnipeg, Man. (B. Peturson). Specimens were received from Riviere du Loup, Charlesbourg and Quebec City, Que. (D. Leblond). It was sev. in untended orchards in Kamouraska Co. Que. (R.O. Lachance), and prevalent in most home gardens in N.B. (S.R. Colpitts).

LEAF SPOT (Higginsia hiemalis) was mod.-sev. on Bing, Lambert and Royal Anne at Nakusp and Burton in the Arrow Lakes, B.C. district. It caused some spotting of fruits and premature defoliation (M.F. Welsh). It was general and sev. on Montmorency in the Niagara Peninsula, Ont. (G.C. Chamberlain), and general in home gardens, causing defoliation, in N.B. (S.R.C.).

BROWN ROT AND BLOSSOM BLIGHT (Monilinia fructicola) Although blossom blight was as high as 50% on unsprayed trees at Renata in the Kootenays, B.C., infection did not spread to green fruit and brown rot was negligible at harvest. Set was reduced in some cases by 20-30%. Trees protected by Phygon sprays had about 6% blossom blight (L.E. Lopatecki). Brown rot caused sev. losses in some orchards in the western portion of the Niagara Peninsula, Ont. At St. Catharines, Yellow Spanish showed 22.7% fruit rot, Napoleon, 10.2, Bing, 8.5 and Schmidt, 3.6% (G.C.C.). A sev. infection was seen at St. Simon, Que. (D.L.).

BROWN ROT (Monilinia laxa) was sl. at Burton, Edgewood and Nakusp, B.C. It had not previously been found in the Arrow Lakes district (L.E.L.).

BLOSSOM AND TWIG BLIGHT (Monilinia padi) caused extensive dying-back and cankering of twigs and young branches on sour cherries near Charlottetown, P.E.I. (D.W. Creelman). It was less severe than in 1959 but was found to be general throughout the province (G.W. Ayers).

TRUNK ROT (? Phytophthora cactorum) girdled and killed 3 trees of the variety Van at Burton in the Arrow Lakes district of B.C. Two trees of the same variety were killed at Edgewood in the same area in 1959. P. cactorum is suspected to be the cause (M.F.W.).

POWDERY MILDEW (Podosphaera clandestina) (Wallr. ex Fries) Lev. = P. oxyacanthae (DC.) de Bary). A 100% infection, causing stunting of twig growth, was seen in a nursery plantation at Niagara, Ont. Powdery mildew was also present in many commercial orchards in the Niagara Peninsula (G.C.C.). It, seemed well controlled in Prince Edward Co., Ont. by sulfur sprays (B.E. Beeler).

CORYNEUM BLIGHT (Stigmina carpophila) (see under Apricot). Specimens were received from Agassiz, B.C. (H.N.W. Toms).

LEAF CURL (Taphrina cerasi) infected a single tree at Naramata, B.C. This is the first occurrence in many years in the Okanagan Valley (L.E.L.).

LITTLE CHERRY (virus). Symptoms were recognized in all varieties in plantings at Burton and MacKinnon Landing in the Arrow Lakes, B.C. district, but not at Edgewood, Needles and Nakusp. This distribution pattern is essentially the same as in 1949 when the last survey was made. There appears to have been little spread since 1949 (M.F.W.). The disease is still unreported in the Okanagan and Similkameen Valleys, B.C. (T.B. Lott, F.W.L. Keane). All varieties of sweet cherries in the West Kootenays, B.C. were affected (W.R.F.).

MOTTLE LEAF (virus) severely affected 1 Bing tree in the Okanagan Valley (T.B.L., F.W.L.K.).

RASP LEAF (virus) affected cherry trees of various varieties in the Okanagan-Similkameen district, B.C. Inoculations from sweet cherry into apple resulted in enations on the apple leaves similar to those on cherry. Such enations have never been observed to occur naturally on apple (T.B.L., F.W.L.K.).

SMALL BITTER CHERRY (virus). A single Bing tree was reported infected at Oliver, B.C. (T.B.L., F.W.L.K.).

TATTER LEAF (virus) was seen on Bing and Schmidt in several orchards in the Grimsby, Ont. area (G.C.C.).

TWISTED LEAF (virus) occurred on a number of varieties of sweet cherry at various places in the Okanagan - Similkameen Valleys, B.C. (T.B.L., F.W.L.K.).

YELLOWS (virus) was prevalent on Montmorency in the Niagara Peninsula, Ont. Yellowing and leaf drop were sev. in 1960 (G.C.C.). Symptoms were observed on 1 tree at the Research Station, Kentville, N.S. (D.W.C.).

CHEMICAL INJURY. Burning of foliage and partial defoliation occurred in 2 Vancouver home gardens after the application of malathion by a custom sprayer (H.N.W.T.).

PEACH

BROWN ROT (Monilina fructicola) was not a factor in orchards in the Niagara Peninsula, Ont. in 1960 but some rot developed in storage (G. C. Chamberlain). Trace infections developed in orchards in Kings and Annapolis counties, N.S. (C.O. Gourley).

POWDERY MILDEW (Podosphaera clandestina (Wallr. ex Fr.) Lev. = P. oxyacanthae (DC.) de Bary) infected terminal growth and caused disfigurement of fruit in the lower Fraser Valley, B.C. (H.N.W. Toms).

RHIZOPUS ROT (R. nigricans). Rain and cold weather during the harvest season and a consequent high proportion of split peaches contributed to a high incidence of Rhizopus rot at canneries at Penticton and Summerland, B.C. Losses were estimated at about $40,000 (L.E. Lopatecki).

CORYNEUM BLIGHT (Stigmina carpophila) (see under Apricot) was reported from home gardens in the Vancouver, B.C. area (H.N.W.T.) A small percentage of fruits in several orchards in the B.C. Interior were affected (D.L. McIntosh). Incidence was high in the Fraser Valley and sev. damage was encountered at Creston, B.C. (W.R. Foster).

LEAF CURL (Taphrina deformans) affected home garden trees in Vancouver, B.C. (H.N.W.T.). It was mod. on unsprayed trees at St. Catharines and Vineland (G.C.C.), and was 2-sev. 1-mod. in 12 orchards examined in Lambton Co., Ont. (J.R. Chard). Trace infections occurred at Kentville, N.S. (C.O.G.).

WILT (Verticillium dahliae) was found in several orchards in the Summerland, B.C. district (G.E. Woolliams). A number of orchards in

Essex Co., Ont. showed wilt in 2-5 year-old trees in early July. Two orchards at Leamington had 8 and 12% infection respectively. Few trees were killed but most lost one or more branches. In all cases, the infection could be traced to previous crops of susceptible hosts such as tomatoes or potatoes (C.D. McKeen, J. Cutcliffe).

BACTERIAL SPOT (Xanthomonas pruni) was observed in most peach orchards in Essex Co., Ont. Susceptible varieties, such as July Elberta and Veteran were severely defoliated by mid-summer and other varieties dropped leaves to a lesser extent. Spots appeared on fruits of susceptible varieties and, where cracking or pitting occurred, the fruits were unmarketable (J.C.).

WESTERN X-DISEASE (virus), although still present in the Okanagan Valley, B.C., is less important economically than formerly. The low rate of spread may be related to the control of the vector through the widespread use of DDT (T.B. Lott, F.W. L. Keane).

CHEMICAL INJURY. One tree in a Vancouver, B.C. garden was severely defoliated after spraying with malathion (H.N.W.T.). 2,4-D, used at high concentrations near an orchard at Oliver, B.C. caused injury resulting in the culling of about 8 tons of fruit. Affected fruits developed a red, swollen lip on the suture near the stem end. This swelling softened prematurely (M.F. Welsh).

PLUM

BLACK KNOT (Dibotryon morbosum) was sev. in untended orchards in Kamouraska Co., Que., killing a number of trees (R.O. Lachance). It was prevalent in home plantings in N.B. (S.R. Colpitts), and tr. infections were seen at Upper Dyke and Kentville, N.S. (C.O. Gourley). It was extremely sev. in a small plum orchard at Charlottetown, P.E.I. (J.E. Campbell). Black knot was prevalent on plum trees at various points in the Avalon Peninsula, Nfld. (D.W. Creelman).

LEAF SPOT (Phyllosticta circumcissa) was sev. on a white plum variety at Rimouski, Que. (D. Leblond).

CORYNEUM BLIGHT (Stigmina carpophila) (see under Apricot) was sev. on plum trees at Piopolis, Frontenac Co., Que. (D.L.).

PLUM POCKETS (Taphrina communis). Slight infections were reported from 3 locations in Sask. (R.J. Ledingham). Native plums were affected at Winnipeg Beach and Grand Marias, Man. (B. Peturson). Specimens were received from Notre Dame du Lac and Sillery, Que. (D.L.), and tr. infections were seen on Burbank at Upper Dyke, N.S. (C.O.G.).

CHEMICAL INJURY. Burning of foliage and partial defoliation followed application of malathion in a home garden at Vancouver, B.C. (H.N.W. Toms).

GUMMOSIS, apparently following winter injury was seen on 5/24 trees at Granby, Que. (D.W. Creelman, L. Cinq-Mars).

IRON INCLUDED CHLOROSIS was common in many gardens in the Winnipeg, Man. district (B.P.).

PRUNE

BROWN ROT (Monilinia fructicola) affected 18% of the fruit of Stanley prune in common storage for 7 days at St. Catharines, Ont., although no infection was seen on the tree (G.C. Chamberlain).

C. RIBES FRUITS

CURRANT

WHITE PINE BLISTER RUST (Cronartium ribicola). A 60% infection was seen on red currant at Westfield, Kings Co., N.B. (S.R. Colpitts). It caused sev. defoliation of susceptible varieties of black currant in Kings Co.,N.S. (J.F. Hockey).

ANTHRACNOSE (Drepanopeziza ribis). A sev. infection developed on white currants at Rimouski, Que. (D. Leblond). It was sev. on black currants at St. John's West, Nfld. (O.A. Olsen).

CLUSTER CUP RUST (Puccinia caracina) affected 80% of the currants in a planting at St. Pascal, Que. (L.J. Coulombe). Infection was mod. on red and black currants at the Research Station, Fredericton, N.B. and sl. infections were noted at the Exp. Farm, St. John's West, Nfld., (D.W. Creelman).

POWDERY MILDEW (Sphaerotheca mors-uvae). Affected specimens from Yorkton and Saskatoon, Sask. were seen (T.C. Vanterpool, R.J. Ledingham).

GOOSEBERRY

LEAF SPOT (Mycophaerella ribis). Ten percent of the foliage of the variety Poorman showed yellowing early in Aug. at Kentville, N.S. and extensive defoliation was anticipated (K.A. Harrison).

DOWNY MILDEW (Plasmopara ribicola) was 1-sev. 1-mod. 2-sl./5 bushes in an Ottawa, Ont. garden. The only other Canadian report of P. ribicola on gooseberry in Canada is also from Ontario. (C.P.D.S. 25: 96. 1946) (I.L. Conners).

CLUSTER-CUP RUST (Puccinia caricina) was tr. on gooseberries at Kentville, N.S. (K.A.H.).

D. RUBUS FRUITS

RASPBERRY

CROWN GALL (Agrobacterium tumefaciens). Every fruiting cane in one seedling line at the Research Station, Kentville, N.S. showed infection at the point where buds grew to form laterals (K.A. Harrison).

GRAY MOLD (Botrytis cinerea). Canes of 2 seedling lines at the Kentville, N.S. Research Station bore numerous fruiting sclerotia in mid-May. Application of the organic mercurial, Erad, prevented germination of approximately 90% of the sclerotia on standing stems. A few new canes showed sl. infection at the end of the season (K.A.H.).

SPUR BLIGHT (Didymella applanata). Infected specimens were received from Turtleford, Sask. (T.C. Vanterpool). The variety Latham was mod. infected at Binbrook, Ont. (G.C. Chamberlain). A seedling line at Kentville, N.S. had 25% of the new canes infected. Commercial plantings were slightly affected (K.A.H.).

ANTHRACNOSE (Elsinoe veneta) occurred in patches in a 6-acre field of Willamette at Greendale, nr. Chilliwack, B.C. (R. Stace-Smith). Mod. infections were reported on Taylor and Madawaska in the Niagara Peninsula, Ont. (G.C.C.) Viking was mod. attacked in Kings and Sunbury counties, N.B. (S.R. Colpitts). A light, general infection developed on unsprayed seedling lines at the Research Station, Kentville, N.S. The more susceptible lines were heavily infected at the end of the season although standard varieties in the Kentville area were generally clean. Infection was sev. on Cuthbert in the Sydney area (K.A.H.).

CANE BLIGHT (Leptosphaeria coniothyrium) was sev. on fruiting canes of Willamette at Melvern Square, N.S. (J.F. Hockey).

YELLOW RUST (Phragmidium rubi-idaei). The variety Washington was infected in B.C. This variety, replaced largely by Newburgh in the 1950's, is now seldom grown commercially in B.C. (R.S.-S.). Mod.-sev. infections were reported from St. Romuald, Levis Co., Que. (D. Leblond).

DIE-BACK (Phytophthora sp.) occurred in wet, low-lying areas of Lulu Island, B.C. (H.N.W. Toms).

LATE YELLOW RUST (Pucciniastrum americanum) was tr. on druplets of Viking at Kentville, N.S. This rust is usually quite destructive on Viking (K.A.H.).

POWDERY MILDEW (Sphaerotheca macularis (Wallr. ex Fries) W.B. Cke. = Sphaerotheca humuli (DC.) Burr. affected a few shoots on Creston 151 at Summerland, B.C. (D.L. McIntosh).

WILT (Verticillium albo-atrum) was severe in a planting at Ste. Anne de Beaupre, Que. (D.L.). A 20% infection was seen in a patch of Viking planted on soil previously cropped to potatoes nr. Kentville, N.S. (K.A.H.).

LEAF CURL (virus) has occurred in Lloyd George and Viking for some years in home gardens in the Okanagan Valley, B.C. Greenhouse experiments in 1960 showed the causal virus to be the same as the one causing leaf curl in Ontario (R.S.-S.). A few stools were infected at Beamsville, Ont. (G.C.C.).

MOSAIC (virus) was very common and caused a marked reduction in vigor and growth in a planting at Beamsville, Ont. (G.C.C.). It was tr. in a planting at Granby, Que. (D.W. Creelman, L. Cinq-Mars). Mosaic caused yield reduction in a planting at Sussex, N.B. (S.R.C.), and several introduced breeding lines had to be discarded at Kentville, N.S. because of mosaic (K.A.H.).

WINTER KILLING caused the loss of 20% of a planting of Viking at Bell's Corners, Ont. There was no evidence of anthracnose or other cane diseases (D.W.C.).

LIME INDUCED CHLOROSIS was quite prevalent in plantings in the Winnipeg, Man. area (B. Peturson).

BLUEBERRY

TWIG AND BLOSSOM BLIGHT (Botrytis cinerea). Infection was 2% on highbush blueberries early in the season at Kentville, N.S. (C.L. Lockhart).

RED LEAF (Exobasidium vaccinii) was sl. in a large barren at Avondale, Nfld. (D.W. Creelman, O.A. Olsen).

CANKER (Fusicoccum putrefaciens). All plants of all varieties of highbush blueberries at the Farm School, La Gorgendiere, Que. were diseased, each having several dead stems. Both conidial and apothecial stages of the organism were present (D.W.C., D. Leblond). Canker was tr. in a 5-acre field at Morristown, N.S. This planting had been free of canker for about 10 years. All plants in a small planting on the Exp. Farm St. John's West, Nfld. were infected. Many had been completely killed (D.W.C.).

POWDERY MILDEW (Microsphaera penicillata (Wallr. ex Fries) Lev. var vaccinii (Fr.) W.B. Cke. = Microsphaera alni (Wallr.) Salmon var vaccinii (Schw.) Salmon) occurred as trace infections at the Blueberry Sub-station, Avondale, Nfld. (D.W.C.).

TWIG AND BLOSSOM BLIGHT (Monilinia vaccinii-corymbosi) was tr.-2% at St. Stephen, N.B. Dry weather apparently kept it in check (S.R. Colpitts). It averaged tr. at Steam Mill, N.S. in a 6-acre field although in isolated patches 60% of the spurs were blighted and bore conidia (J.F.H.).

WITCHES' BROOM (Pucciniastrum goeppertianum) was present in all N.B. fields visited but was severe in none (S.R.C.). Trace infections were found in a 5-acre field of highbush blueberries in a corner near coniferous woods at Morristown, N.S. (D.W.C., R.G. Ross). Infection was tr.-2% in a large barren at Avondale, Nfld. (D.W.C., O.A.O.).

STUNT (virus) affected 2 plants of the variety Jersey in a 5-acre field of highbush blueberries at Morristown, N.S. (D.W.C.).

CRANBERRY

POWDERY MILDEW (Microsphaera penicillata) (Wallr. ex Fries) Lev. var vaccinii (Fr.) W.B. Cke. = Microsphaera alni (Wallr.) Salmon var vaccinii (Schw.) Salmon). Cleistothecia were found on leaves of young plants in a recent planting on Lulu Island, B.C. (H.N.W. Toms, D.B.O. Savile). This constitutes the first report to the Survey of this organism on cranberry in Canada. It may also be a new record for the Pacific Northwest (D.W. Creelman).

ROSE BLOOM AND RED LEAF (Exobasidium vaccinii) was observed in a bog on Lulu Island, B.C. (H.N.W.T., D.B.O.S.).

HARD ROT (Monilinia oxycocci) affected about 1% of the fruits from a bog at Lulu Island, B.C. Although the owner had observed the condition since 1948 it had not been reported from this area (H.N.W.T.).

E. OTHER FRUITS

GRAPE

CROWN GALL (Agrobacterium tumefaciens) was present on a French hybrid at Stamford, Ont. This particular variety appears very susceptible and suffers die-back of cane growth and loss of vines (G.C. Chamberlain).

DEAD ARM (Fusicoccum viticola). At St. Catharines, Ont., 30-45% of the shoots of Seibel 10878 showed lesions on the shoots (G.C.C.).

DOWNY MILDEW (Plasmopara viticola) was general on foliage of Delaware and Agawam at St. Catharines, Ont. in June. The first variety was more seriously affected. In August, 3-7.5% of the fruit clusters of unsprayed Fredonia were destroyed at Niagara-on-the-Lake, Ont. Traces only were seen on sprayed vines (G.C.C.). Infection was mod.-sev. in an unsprayed planting at Granby, Que. in July. Many fruit clusters were affected (D.W. Creelman, L. Cinq-Mars.)

POWDERY MILDEW (Uncinula necator) was very general and widespread on most varieties in the Niagara Peninsula, Ont. Infection of fruit stems was common and the disease caused a delay in ripening and poor fruit quality. The variety Concord, usually not seriously affected, showed

heavy infections. In some districts the disease was in epidemic proportions; Agawan was completely infected at Beamsville (G.C.C.).

STRAWBERRY

GRAY MOLD (Botrytis cinerea) caused slight damage in a garden patch at Lethbridge, Alta. (P.E. Blakeley). Trace amounts were observed during harvest in the St. Catharines, Ont. district. There were reports of serious losses in some commercial plantings (G.C. Chamberlain). Gray mold, in tr.-sl. amounts was found in many N.B. plantings but the onset of dry weather prevented serious losses (S.R. Colpitts). Infection was heavy in a field in third-crop year nr. Mt. Stewart, P.E.I. (D.W. Creelman).

GANGRENE (Botrytis cinerea, Rhizoctonia solani, Rhizopus spp.). Specimens were received from St. Etienne des Gres, St. Maurice Co. and from St. Jean, Ile Orleans, Que. It usually occurs after frost injury (D. Leblond).

SLIME MOLD (Diachea leucopodia (Bull.) Rostr.) affected leaf blades and pedicels of British Sovereign at Yarrow, B.C. The damage, if any, could not be assessed (H.N.W. Toms, D.B.O. Savile).

LEAF BLIGHT (Dendrophoma obscurans) was commonly found on the varieties Cavalier and Redcoat at the Horticultural Station, Vineland, Ont. Infection was found on blossoms and leaf petioles. These varieties appear quite susceptible (G.C.C.). Leaf and calyx infection was about 2% on Sparkle at the Research Station, Kentville, N.S. (C.O. Gourley).

LEAF BLOTCH (Gnomonia fructicola). Sparkle showed 2% leaf and calyx infections at the Research Station, Kentville, N.S. (C.O.G.).

LEAF SPOT (Mycosphaerella fragariae) was mod. on Cavalier at Vineland, Ont. (G.C.C.). Early infections were noted in Prince Edward Co., Ont. but spread was checked by fungicidal sprays (B.E. Beeler). Infected specimens were received from Three Rivers and Boucherville, Que. (D.L.). Leaf spot was present in all areas of N.B. Some plantations were heavily infected, but generally it was light (S.R.C.). The varieties Sparkle and Louise averaged 50% infection at Berwick, Blomidon, Kentville and Chester Basin, N.S. (C.O.G.). It was reported, chiefly on Senator Dunlop, from all commercial strawberry plantations in P.E.I. Spring burning appears to give good control of leaf spot. (J.E. Campbell). Several varieties in a variety test at St. John's West, Nfld. were affected. Mont Rosa, a runnerless variety seems highly susceptible (D.W.C., O.A. Olsen).

RED STELE (Phytophthora fragariae) was observed on a number of farms in the southern part of Vancouver Island and in the Fraser Valley, B.C. (W.R. Foster). Mod. damage was observed in a small commercial planting nr. Lethbridge, Alta. (P.E. Blakeley). It caused a 50% loss of Cavalier plants in a field planted in a low, moist area at Centerville, N.S. (C.O.G.).

DECLINE (Pratylenchus penetrans). A field at Cottam, Ont. was infected. Affected plants were stunted with necrotic roots (W.B. Mountain, R.M. Sayre).

LEAF SPOT (Septoria aciculosa) was tr. at the Research Station, Kentville, N.S. (C.O.G.).

POWDERY MILDEW (Sphaerotheca macularis Wallr. ex Fries) W.B. Cke. = Sphaerotheca humuli (DC.). Burr.). Incidence was high on Vancouver Island and low in the Fraser Valley, B.C. (W.R.F.). Specimens were received from St. Dominique, Bagot Co. and St. Ephrem, Beauce Co., Que. (D.L.). Tr. infections were seen on Sparkle at Melvern Square, N.S. (C.O.G.), and most commercial plantings in Queens Co., P.E.I. had sl.-mod. infections (J.E.C.).

WILT (Verticillium spp.). V. ? dahliae caused wilt in some plantings in the Summerland, B.C. district (G.E. Woolliams). V. albo-atrum caused the loss of 20% of the plants in a garden at New Minas, (C. L. Lockhart), and 50% of the plants in a planting at Sheffield Mills, N.S. (C.O.G.). It also affected 25% of a 1-acre field at Blomidon, N.S. (C.O.G.).

ROOT ROT (various organisms) was general in older plantings in s. Alta. (F.R. Harper). A planting of Cavalier at Ste. Anne de la Pocatiere suffered mod. damage (L.J. Coulombe). Root rot in N.B. was general and aggravated by a hot, dry August (S.R.C.). A similiar condition prevailed in P.E.I. (J.E.C.).

GREEN PETAL (virus) was recorded from La Sarre, Abitibi Co., and was observed in slight amounts at the Plant Protection Station, Ste. Foy, Que. (D.L.). It was present in most plantings in the lower St. Lawrence area of Que. in tr.-sl. amounts. One sev. case was found at St. Pascal where a 20% infection was seen in a first-crop year planting of Senator Dunlop (R.O. Lachance). The majority of second-crop plantings in N.B. were infected (S.R.C.). The incidence of green petal increased alarmingly in Nova Scotia's Annapolis Valley in 1960. New plantings in some districts were 50% infected. No variety appears immune (C.O.G.).

HOLLOW HEART (physiologic). This condition, apparently caused by extremely dry weather following a period of abundant rainfall, affected 20% of the fruit of Redcoat at Ste. Anne de la Pocatiere, Que. (L.J.C.).

LIME INDUCED CHLOROSIS was encountered in many plantings in the Winnipeg, Man. area (B. Peturson).

V. DISEASES OF TREES AND SHRUBS

ABIES - Fir

Witches Broom (Melampsorella caryophyllacearum) was quite prevalent on A. balsamea throughout the Avalon Peninsula, Nfld. (D.W. Creelman).

Rust (Pucciniastrum goeppertianum). The needles of several fir trees were sev. infected at St. John's West, Nfld. (D.W.C.).

ACER - Maple

Canker (Cytospora ambiens) girdled and killed limbs of A. platanoides at Windsor, Ont. The specimen received showed extensive cankers with the pathogen fruiting profusely (D.W.C., S.J. Hughes).

Leaf spot (Phyllosticta minima) was mod.-sev. on A. saccharum at the Provincial Zoo, Orsainville, Que. (D. Leblond).

Tar Spot (Rhytisma acerinum). Specimens of affected A. saccharinum were received from St. Tite, Champlain Co., Que. (D.L.).

Wilt (Verticillium albo-atrum) was found affecting Acer spp. at Harrow, Ont. (A.A. Hildebrand).

Leaf Scorch (physiological) is reported each summer in dry periods in the Vancouver, B.C. area, particularly where trees are grown in rockeries or in apartment house planters (H.N.W. Toms).

AESCULUS - Horsechestnut

Leaf Blotch (Guignardia aesculi) affected 50% of the foliage of A. hippocastanum at Kentville, N.S. (C.O. Gourley). Street trees at Yarmouth, Hebron and Port Maitland, N.S. were sev. affected (D.W.C.). Incidence in P.E.I. was the lightest in several years, probably due to the dry weather (J.E. Campbell)

AMELANCHIER

Rust (Gymnosporangium clavariaeforme) was sev. on Amelanchier spp. at St. John's West, Nfld. (O.A. Olsen).

Iron-induced Chlorosis was quite common on Amelanchier spp. in the Winnipeg, Man. district (B. Peturson).

BERBERIS - Barberry

Dieback (Dothiorella ? ribis) was sev. on hedges of B. thunbergii at the Plant Protection Station, Ste. Foy, Que. (D.L.).

Rust (Puccinia graminis) was found on B. vulgaris in N.B. (G.B. Orlob, R.H.E. Bradley) (C.P.D.S. 40: 2. 96. 1960).

Wilt (Verticillium albo-atrum) affected Berberis spp. at Harrow, Ont. (A.A.H.).

BETULA - Birch

Anthracnose (Gloeosporium betularum). Infected specimens of Betula sp. were received from Montreal, Que. (P. Basu).

Rust (Melampsoridium betulinum) affected 100% of B. albo var. pendula in a one and one-half-acre nursery planting at Yarrow, nr. Chilliwack, B.C. (A.E. Straby, J.A. Parmelee).

BUXUS - Boxwood

Winter Killing. Two shrubs of B. sempervivens, though well protected, were partially killed during the 1959-60 winter at Ottawa, Ont. (D.W.C.).

CATALPA

Wilt (Verticillium albo-atrum) affected some trees at Harrow, Ont. (A.A.H.).

CHAMAECYPARIS

Die-Out (Phytophthora lateralis) killed plants in 2 hedges of C. lawsoniana at Vancouver, B.C. (H.N.W.T.). This disease continues to cause considerable damage in the coastal areas of B.C. (W.R. Foster).

CLEMATIS - Virgin's Bower

Root-knot Nematode (Meloidogyne sp.) was prevalent on the roots of 100 small plants of C. jackmanii in a nursery at Fonthill, Ont. Other species and varieties did not appear affected (W.G. Kemp).

COTINUS - Smoke Tree

Winter Killing. A single bush was killed in a garden at Ottawa, Ont. during the 1959-60 winter (D.W.C.).

COTONEASTER

Leaf Spot (Phyllosticta sanguinea) was sev. on C. acutifolia at the Provincial Zoo, Orsainville, Que. (D.L.).

CRATAEGUS - Hawthorn

Leaf Blight (Fabraea maculata) caused considerable defoliation of C. oxyacanthae at Chilliwack, B.C. in May and at North Vancouver in Aug. (H.N.W.T.). Heavily infected specimens were received from Coburg, Ont. (H.S. Thompson). Infection was mod. with some defoliation on a 200-ft. hedge at Yarmouth, N.S. (D.W.C.).

Rust (Gymnosporangium clavipes) was mod. on Crataegus sp. nr. Ste. Anne de la Pocatiere, Que. (D.W.C.).

DAPHNE

Anthracnose (Marssonina daphnes). Infection was heavy and defoliation almost complete on D. mezereum in a perennial bed at Saanichton, B.C. (R.G. Atkinson).

HYDRANGEA

Powdery Mildew (Erysiphe communis Wallr. ex Fries = E. cichoracearum DC.). A 60% infection was seen at Marysville, N.B. (S.R. Colpitts).

ILEX - Holly

Chemical Injury. Fertilizer burn from a heavy application of chicken manure killed 25-30 young holly trees nr. Cloverdale, B.C. (H.N.W.T.).

JUNIPERUS

Rust (Gymnosporangium clavipes). Telial horns were fully gelatinized and producing basidiospores in late May at Kentville, N.S. (J.F. Hockey).

LONICERA - Honeysuckle

Leaf and Twig Blight (Ascochyta sp.) caused sev. defoliation and twig blight on Lonicera sp. at the Research Station, Fredericton, N.B. (K.M. Graham).

Gray Mold (Botrytis cinerea) affected leaves and berries of Lonicera sp. at Fredericton, N.B. (G.B. Orloh) (C.P.D.S. 40: 2. 68. 1960).

Leaf Blight (Herpobasidium deformans) was mod. on a single bush of L. tatarica on the O.A.C. campus at Guelph, and it was tr. on the same host in Vincent Massey Park, Ottawa, Ont. (D.W.C.).

Powdery Mildew (Microsphaera penicillata (Wallr. ex Fries) Lev. var. lonicerae (Fries) W.B. Cke = M. alni (Wallr.) Salmon). Infection was mod. on a 50-foot hedge of L. tatarica at Ottawa, Ont. (D.W.C.). Specimens were received from Three Rivers, Que. (D.L.), and it was present in N.B. but caused little damage (G.B.O.) (C.P.D.S. 40:2. 69. 1960).

MALUS - Ornamental Crab

Rust (Gymnosporangium sp.) was sev. on flowering crabs at St. John's West, Nfld. (O.A.O.)

Scab (Venturia inaequalis). Infected specimens were received from Waterloo, Ont. (P.B.).

Dwarfing, Dieback, etc (virus). A nurseryman in a Fraser Valley, B.C. nursery propagated thousands of flowering crab scions, in approximately

50 species and varieties, on 7 different Malling and Malling Merton root-stocks. Thirty-seven % of these varieties had low scion take, were dwarfed, died back from tips, and/or displayed leaf curling, mottling and necrosis. Several varieties were sensitive on Malling Merton 104. Most varieties were sensitive on Malling II, Malling IX and Malling Merton 106. Evidence suggests that several latent viruses are involved (M.F. Welsh).

PICEA - Spruce

Witches' Broom (Peridermium coloradense) was frequently observed on Picea spp. in the Avalon Peninsula, Nfld. (D.W.C.).

PINUS - Pine

White Pine Blister Rust (Cronartium ribicola) was observed on a tree of P. strobus grown as an ornamental at Fort Garry, Man. (W.J. Cherewick).

PLATANUS - Sycamore

Anthracnose (Gnomonia veneta) was sev. and widespread in the coastal areas of B.C. and caused up to 50% defoliation (W.R.F.). Three badly infected trees were seen at Merriton, Ont. Twigs were killed back and some defoliation had occurred (W.G.K.).

POPULUS - Poplar

Ink Spot (Ciborinia whetzelii). Specimens on P. nigra var. italica were received from Drummondville, Que. (D.L.).

Canker (Cytospora chrysosperma). Sev. infections were seen on P. nigra var. italica in the Gaspe Peninsula and Matapedia Valley, Que. (D.L.).

Canker (Dothichiza populea). Severe killing of P. nigra var. italica was observed at New Minas (C.L. Lockhart) and at Grand Pre, N.S. (K.A. Harrison).

Anthracnose (Marssonina populi). A small block of P. tremuloides at Lakeville, N.S. was 50% defoliated. Infection in 1959 had killed many twigs (K.A. H.).

Powdery Mildew (Uncinula salicis). Specimens were received on P. balsamifera from Jonquiere, Que. (D.L.).

PRUNUS

Black Knot (Dibotryon morbosum) was seen on an ornamental planting at Lethbridge and on a few wild shrubs in Waterton Park, Alta. (P.E. Blakeley, F.R. Harper).

Blossom Blight (Monilinia fructicola) was heavy on chokecherries along the roadside from Castelgar to Deer Park, B.C. Infection approached 100% (L.E. Lopatecki). Infection was 75% on P. triloba at New Minas, N.S. (C.L.L.).

Shothole (Stigmina carpophila). Infected specimens of P. laurocerasus were received from home gardens in the Vancouver, B.C. area (H.N.W. Toms).

PYRUS - Mountain Ash

Canker (Cytospora rubescens) affected a number of trees at the Chilliwack Army Camp, B.C. (R.G.A.).

Fire Blight (Erwinia amylovora). Specimens on P. americana were received from Sillery, Que. (D.L.).

Rust (Gymnosporangium cornutum) was sev. on P. decora at Clearwater Bay, Ont. (W.L. Gordon).

Lime-induced Chlorosis was common in the Winnipeg, Man. area (B.P.).

QUERCUS - Oak

Leaf Blister (Taphrina caerulescens). Slight infections were observed at Ste. Anne de la Pocatiere, Que. (L.J. Coulombe).

RHAMNUS - Buckthorn

Crown Rust (P. coronata). A mod. infection was seen on R. frangula at Guelph, Ont. (D.W.C.). Light infections occurred on R. alnifolia and R. cathartica at Fredericton and Moncton, N.B. (G.B.O., R.H.E.B.) (C.P.D.S. 40:2. 84, 94. 1960).

RHODODENDRON - Azalea

Rose Bloom (Exobasidium vaccinii). Specimens of affected azaleas were received from Gibson's Landing and Mission City, B.C. (H.N.W.T.).

RIBES - Flowering Currant

Anthracnose (Gloeosporidiella variabilis (Laub.) Nannf.) was sev. on a hedge of R. alpinum in Rockcliffe Park, Ont. Specimens filed in DAOM from Liverpool, N.S., Montreal, Que. and Ottawa, Ont. under Gloeosporium ribis, Pseudopeziza ribis and Drepanopeziza ribis seem to belong here. The few records and specimens at hand suggest a recent introduction into eastern Canada (D.B.O. Savile). It affected 100% of the plants in a young hedge at Ottawa, Ont. (D.W.C.). and was sev. on R. alpinum in a nursery at Chaudiere Bassin, Que. (D.L.).

Leaf Spot (Septoria ribis) was mod. on R. alpinum in a nursery at Chaudiere Bassin, Que. (D.L.).

Powdery Mildew (Sphaerotheca mors-uvae) was sl. in a nursery at Chaudiere Bassin, Que. (D.L.).

ROSA - Rose

Bud Rot (Botrytis cinerea). Specimens of a bush rose from Sydney, N.S. was sev. affected (J.F.H.).

Black Spot (Diplocarpon rosae). Some sev. infections were seen in Saskatoon, Sask. (R.J. Ledingham). Specimens were received from Lotbiniere and Lake St. Joseph, Que. (D.L.). It was sl. at Fredericton and several other localities in N.B. (G.B.O.) (C.P.D.S. 40:2. 70. 1960), and a 60% infection was seen at St. Andrews, N.B. (S.R.C.). Some unsprayed varieties were defoliated at Kentville (J.F.H.) and at Bridgetown, N.S. (D.W.C.). Infection ranged from sl.-sev., depending on variety, in a large planting in a nursery at Bunbury, P.E.I. (D.W.C.).

Leaf Spot (Mycophaerella rosicola). Infection was 40% at Woodstock and the disease also was observed in eastern N.B. (G.B.O.) (C.P.D.S. 40:2. 69. 1960).

Rust (Phragmidium spp.) was mod. on young stems at Morden, Man. in close proximity to abundant telia on over-wintered stems. Rust was destructive in the same planting in 1959 (W.A.F. Hagborg). Specimens were seen from Perth, Ont. and the disease was reported to be prevalent in that area (H.S.T.). Infection was tr.-sl., depending on variety, in large planting at Bunbury, P.E.I. and was heavy on hybrid tea roses at Bridgetown, N.S. (D.W.C.).

Powdery Mildew (Sphaerotheca pannosa) was mod. on 2 plants of Talisman in an Ottawa, Ont. garden (D.W.C.). It was commonly found but rarely serious in N.B. (S.R.C.), (G.B.O.) (C.P.D.S. 40:2. 70. 1960). Ramblers at Wolfville, N.S. were severely affected (D.W.C.).

Mosaic (virus). A single plant of Talisman in a home garden at Ottawa, Ont. has exhibited mod. symptoms for the past 2 years (D.W.C.). A few plants of Grussen Teplitz were affected at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 67. 1960).

Iron Deficiency. Mod. chlorosis of roses was commonly encountered in the Winnipeg, Man. area (W.L.G.).

SALIX - Willow

Blight (Fusicladium saliciperdum). Specimens of infected S. babylonica were received from Agassiz, B.C. (H.N.W.T.). It was reported on S. pentandra from Ste. Foy, on S. babylonica from Carleton and Three Rivers and on undetermined Salix spp. from St. Laurent, Ile Orleans, Quebec City and Rouyn, Que. (D.L.). Infection was very heavy at St. Germain, St. Roch and Ste. Anne de la Pocatiere, Que. (L.J.C.). Severe defoliation occurred on French willows at Grand Pre (K.A.H.), and nr. Annapolis Royal, N.S. (D.W.C.). Willows in a nursery at Bunbury, P.E.I. were sev. affected and defoliated (D.W.C.).

Nüesch (Phytopath Zeits. 39: 349. 1960) has described the perfect state for this fungus and assigned it to the genus Venturia as V. saliciperda Nüesch. He also points out that the conidial stage is properly assigned to Pollacia saliciperda (All. & Tub.) v. Arx. (D.W.C.).

SPIRAEA

Coral Canker (Nectria cinnabarina). Specimens were received from Champlain, Que. (D.L.).

SYMPHORICARPOS - Snowberry

Powdery Mildew (Microsphaera diffusa) was general on S. albus on the U.B.C. campus, Vancouver, B.C. A few cleistothecia were present (H.N.W.T.).

SYRINGA - Lilac

Powdery Mildew (Microsphaera penicillata (Wallr. ex Fries) Lev. = M. alni (Wallr.) Salmon). Infection was heavy on a few young bushes of S. vulgaris in an Ottawa, Ont. garden (D.W.C.). It appeared late in most N.B. localities (G.B.O.) (C.P.D.S. 40:2. 69. 1960).

Bacterial Blight (Pseudomonas syringae). Specimens were received from several coastal areas of B.C. (W.R.F.). It was present on about half of the lilacs in a variety planting at the Research Station, Fredericton, N.B. Cankers were numerous and in some cases extensive (D.W.C., K.M.G.).

Ring Spot (? virus). Distinct virus-like symptoms were displayed on several branches of a bush at Kelowna, B.C. (G.E.W.).

Chlorotic Line Pattern (? virus). Line-pattern symptoms, accompanied by foliar necrosis, are sev. annually on a shrub of the Mme. Lemoigne variety at Summerland, B.C. Most leaves are killed by mid-summer. A neighboring bush of Persian lilac has a chlorotic flecking of the leaves (M.F.W.).

TAXUS - Yew

Root Rot and Dieback (Phytophthora sp.) killed several trees in a hedge at Vancouver, B.C. (H.N.W.T.).

Chemical Injury. The effects of 2,4-D, used on a lawn at Vancouver, B.C. caused new growth to be flaccid and to droop (H.N.W.T.).

TILIA - Linden

Leaf Spot (Cercospora microsora). Infection was heavy on 3 trees of T. americana and premature defoliation had begun in early Aug. at Bridgetown, N.S. (D.W.C.).

Anthracnose (Gnomonia tiliae). Infected specimens of T. americana were received from Les Ecureuils, Portneuf Co., Que. (D.L.). It was mod. on several trees of T. europaea in a nursery at Bunbury, P.E.I. and on street trees of T. cordata at St. John's, Nfld. (D.W.C.).

Spot Anthracnose (Elsinoe tiliae). Infection was mod. on 12 trees of T. platyphyllos at Bridgetown, N.S. (D.W.C.).

Powdery Mildew (Uncinula clintonii) was sev. on sucker leaves at the base of a large tree of T. americana at Blue Sea Lake, Que.(J.A.P., W.B. Kendrick).

ULMUS - Elm

Coral Canker (Nectria cinnabarina) killed 20/24 2-year old plants of U. pumila in a hedge at Ottawa, Ont. (P.B.), and was destructive in a hedge of the same species at Fredericton, N.B. (D.W.C.).

VIBURNUM

Wilt (Verticillium albo-atrum) affected Viburnum sp. at Harrow, Ont. (A.A.H.).

VI DISEASES OF HERBACEOUS ORNAMENTAL PLANTS

ACHILLEA - Sneezewort

Rust (Puccinia millefolii) affected 50% of the A. ptarmica, variety Pearl, at the Research Station, Fredericton, N.B. (G.B. Orlob) (C.P.D.S. 40:2. 70, 1960).

AGERATUM

Aster Yellows (virus). Trace infections were seen in a planting at Winnipeg, Man. (W.L. Gordon).

ALTHAEA - Hollyhock

Rust (Puccinia malvacearum) was common in the Okanagan Valley, B.C. (G.E. Woolliams). It was tr. in a planting at Winnipeg, Man. (W.L.G.) A large planting, many years old, was 100% infected at Abbotsford, (D.W. Creelman), and specimens were received from Levis, Que. (D. Leblond). Rust was generally distributed throughout N.B. (G.B.O.) (C.P.D.S. 40:2. 70. 1960), and was also general in P.E.I. (J.E. Campbell).

ANTIRRHINUM - Snapdragon

Downy Mildew (Peronospora antirrhini) was found on all 300 plants of the variety Temptation Red at Vineland, Ont. Other varieties were not affected. Late afternoon watering and overcast days had aided disease development (W.G. Kemp).

Rust (Puccinia antirrhini). Slight infections occurred in the Okanagan Valley, B.C. (G.E.W.).

AQUILEGIA - Columbine

Powdery Mildew (Erysiphe polygoni) became quite general in the Okanagan Valley, B.C. after the bloom period (G.E.W.).

ASTER

Rust (Coleosporium asterum) was widely scattered and light in N.B. (G.B.O) (C.P.D.S. 40:2. 70. 1960).

Powdery Mildew (Erysiphe communis Wallr. ex Fries = E. cichoracearum D.C.) was exceptionally sev. on all aster varieties in L'Islet and Kamouraska counties Que. Complete defoliation was often seen (L.J. Coulombe).

BEGONIA

Foliar Nematode (Aphelenchoides olesistus). Rusty, water-soaked leaves were found on all 50 plants in a small greenhouse at Fenwick, Ont.

Large numbers of the nematode were recovered. Severe damage also was found on 23/100 plants of the variety Lady Mac at Hamilton, Ont. (W.G.K.)

Powdery Mildew (Erysiphe communis Wallr. ex Fries = E. cichoracearum DC.) was noted on a few tuberous begonias at Lethbridge, Alta. (P.E. Blakeley). Infection ranged from tr.-mod. on 25 tuberous begonias at Ottawa, Ont. (D.W.C.), and it was troublesome on both indoor and outdoor tuberous begonias at Chute Panet, Portneuf Co., Que. (H.S. Thompson).

CALENDULA

Aster Yellows (virus) was tr. at Grand Pre, N.S. in Sept. (K.A. Harrison) (C.P.D.S. 40:2. 99. 1960).

CALLISTEPHUS - China Aster

Aster Yellows (virus) was sev. in a planting at Winnipeg, Man. (W.L.G.). Ninety % of the plants were infected in a planting at Fredericton, N.B. in Sept. (G.B.O.) (C.P.D.S. 40:2. 67. 1960). China asters at Kentville were 100% infected and infection was 50% at Grand Pre, N.S. (K.A.H.) (C.P.D.S. 40:2. 99. 1960). Damage in P.E.I. was mod.-sev. (J.E.C.).

CELOSIA - Cockscomb

Aster Yellows (virus) was tr. at Grand Pre, N.S. in Sept. (K.A.H.) (C.P.D.S. 40:2. 99. 1960).

CHRYSANTHEMUM

Gray Mold Blight (Botrytis cinerea) Twelve /300 plants of the variety Fred Shoesmith, 36/100 of Yellow Shoesmith and 12/100 of Luzon were severely infected with Botrytis blight in a greenhouse at Hamilton, Ont. (W.G.K.).

Powdery Mildew (Erysiphe communis Wallr. ex Fries = E. cichoracearum DC.) was seen on chrysanthemums at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 69. 1960).

Wilt (Fusarium oxysporum). Moderate infections were seen at La Gorgondiere, Que. (D.L.).

Stunting (Nematodes). A field of stunted chrysanthemums at Harrow, Ont. had a soil population of 40,000 Paratylenchus projectus per pound of soil. Heavy infestations of P. projectus and Pratylenchus penetrans were found in a similarly stunted field at Port Burwell and in a bed of stunted chrysanthemums in a Leamington, Ont. greenhouse (W.B. Mountain, R.M. Sayre).

Rust (Puccinia chrysanthemi). Infections ranged from tr.-sev. on outdoor chrysanthemums at Esquimalt, B.C. (R.G. Atkinson, W.R. Orchard) (C.P.D.S. 40:2. 109. 1960).

Leaf Spot (Septoria chrysanthemi) was severe and destructive on all plants of several varieties at Canard, N.S. (D.W.C.).

Leaf Mottle (virus). Specimens were received from 2 gardens in the Vancouver, B.C. area (H.N.W. Toms).

Stunt (virus) was extremely prevalent on the following varieties at Hamilton, Ont.: Harlequin 43/50, Dark Almega 100/100, and Acclaim 70/100 plants (W.G.K.).

CLEOME - Spider-Flower

Iron Deficiency. Moderate chlorosis was noted on C. spinosa in various plantings at Winnipeg, Man. (W.L.G.).

CONVALLARIA - Lily-of-the-Valley

Rust (Puccinia sessilis) affected up to 10% of the foliage in several gardens at Kentville, N.S. (J.F.H.).

COSMOS

Blossom Blight (Botrytis cinerea) occurred as trace infections late in the summer at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 68. 1960).

CYCLAMEN

Gray Mold Rot (Botrytis cinerae) was sl. in a commercial greenhouse at Summerland, B.C. (G.E.W.).

DAHLIA

Wilt (Verticillium albo-atrum) affected dahlias at Harrow, Ont. (A.A. Hildebrand).

Mosaic (virus). Susceptible varieties, such as Alma Kelly, were up to 100% infected at Fredericton, N.B. (G.B.O. (C.P.D.S. 40:2. 67. 1960).

DELPHINIUM - Larkspur

Powdery Mildew (Erysiphe polygoni) was seen frequently, late in season, throughout the Okanagan Valley, B.C. (G.E.W.).

Bacterial Leaf Spot (Pseudomonas delphinii) was generally light at Fredericton (G.B.O.) (C.P.D.S. 40:2. 68. 1960), and was mod. in a planting at Shediac, N.B. (D.W.C.).

DIANTHUS - Carnation, Sweet William

Blight (Alternaria spp.). A. dianthi was found on carnation plants in greenhouses at Calgary, Lethbridge and Medicine Hat, Alta. All affected plants were from cuttings propagated in Denmark. The pathogen was determined by J.W. Groves (F.R. Harper). A. dianthicola was sev. on Sweet William at Bell's Corners and Ottawa, Ont. Stem blight was severe and plants were toppling (D.W.C.). It was sev. on Sweet William at St. Ephrem,

Beauce Co., Que. (D. Leblond), and was frequently seen in gardens at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 69. 1960).

Root Knot (Meloidogyne incognita) was sev. on carnations in a range at Leamington, Ont. Plants were stunted and galls were present on roots throughout the range. The most severely affected plants were those which had been growing 2 years. The carnations followed a crop of tomatoes (W.G.K.).

Rust (Uromyces dianthi) occurred on carnations in a Summerland, B.C. greenhouse (G.E.W.).

FICUS - Rubber Plant

Anthracnose (Gloeosporium cingulatum). A specimen was received from Desbien, Que. (P. Basu).

GLADIOLUS

Yellows (Fusarium oxysporum f. gladioli) was sl. at Ste. Foy and a specimen was received from St. Boniface de Shawinigan, Que. (D.L.).

Corm Rot (Fusarium sp.) destroyed 95% of the corms of van Zanten's Glory and 20% of those of the variety Friendship in a planting of 3,000 corms of each variety nr. Charlottetown, P.E.I. Other varieties in the 13-acre planting were not at all or only slightly affected (J.E.C.).

Scab (Pseudomonas marginata) affected 75/3000 plants nr. Victoria, B.C. Many of the diseased plants were stunted, but green and others were badly yellowed. Most either produced no flowers or showed only partial emergence of the flower stalk (R.G. Atkinson). Infection was light on Snow Princess at Berwick, N.S. (K.A.H.).

Dry Rot (Stromatinia gladioli) was prevalent in a commercial grower's fields in Louth Twp., Lincoln Co., Ont. (W.G.K.). Although less prevalent than in 1959, dry rot again was very destructive in 1960. A planting of Spotlight at Kentville, N.S. was 50% affected (K.A.H.).

Mosaic (virus) was observed in several commercial plantings in the Okanagan Valley, B.C. (G.E.W.). There was a general increase in mosaic incidence in 1960 in N.S. Some small plots were over 90% affected and commercial growers are concerned over their holdings (J.F.H., K.A.H.).

Streak (virus) was mod.-sev. in several varieties at Ste. Foy, Que. (D.L.), and was observed in beds at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 67. 1960).

HELIANTHUS - Sunflower

Powdery Mildew (Erysiphe communis Wallr. ex Fries = E. cichoracearum DC.) was seen on an ornamental variety at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 69. 1960).

Wilt (Sclerotinia sclerotiorum) was tr. in a garden at Winnipeg, Man. (W.C. McDonald).

IMPATIENS - Balsam

Root Knot (Meloidogyne hapla) was recorded on this host from a greenhouse at Edmonton, Alta. (J.E. Bosher) (C.P.D.S. 40:2. 107. 1960).

IRIS

Bacterial Leaf Blight (Bacterium tardicrescens). Slight-mod. symptoms were seen in 2 beds at the Research Station, Fredericton, N.B. It was also seen in other parts of the province (G.B.O.) (C.P.D.S. 40:2. 68. 1960).

Blossom Blight (Botrytis cinerea). Late infections caused little damage at Fredericton, N.B. (G.B.O.). (C.P.D.S. 40:2. 68. 1960).

Leaf Spot (Didymellina macrospora). All plants of several varieties in a large planting at Bell's Corners, N.S. were moderately infected in June (D.W.C.). It was present, especially after bloom, in several areas in N.B. (G.B.O.) (C.P.D.S. 40:2. 69. 1960).

Bulb and Stem Nematode (Ditylenchus dipsaci) was found in a planting at Brentwood, B.C. (J.E.B.) (C.P.D.S. 40:2. 107. 1960).

Soft Rot (Erwinia carotovora). Specimens of infected rhizomatous iris were received from New Westminster, B.C. (H.N.W.T.). Light infections were seen on several varieties in N.B. early in May and again late in June (G.B.O.) (C.P.D.S. 40:2. 68. 1960).

LATHYRUS - Sweet Pea

Powdery Mildew (Erysiphe polygoni) was mod.-sev. at Murray Bay, Que. (D.L.).

LILIUM - Lily

Blight (Botrytis elliptica) was sev. on L. tigrinum at St. Romain, Frontenac Co., Que. (D.L.).

Mosaic (virus). A large planting of Regal lilies has been destroyed by mosaic over a period of 6 years at Kentville, N.S. despite rogueing and replanting (K.A.H.).

LINARIA - Toadflax

Aster Yellows (virus) was tr. at Grand Pre, N.S. in Sept. (K.A.H.) (C.P.D.S. 40:2. 99. 1960).

LYCHNIS

Leaf Spot (Septoria lychnidis) was abundant on 2 plants of L. coronaria at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 69. 1960).

MATRICARIA

Aster Yellows (virus). A 5% infection was seen at Grand Pre, N.S. in Sept. (K.A.H.) (C.P.D.S. 40:2. 99. 1960).

MATTHIOLA - Stocks

Foot Rot (Fusarium solani) caused sl. damage at La Gorgendiere, Que. (D.L.).

Aster Yellows (virus). Infection was 15% at Grand Pre, N.S. in Sept. (K.A.H.) (C.P.D.S. 40:2. 99. 1960).

NARCISSUS

Decline (Pratylenchus penetrans). Significant populations of the nematode were found in 12 samples at Saanichton, B.C. (J.E.B.) (C.P.D.S. 40:2. 107. 1960).

NIGELLA - Fennel-Flower

Aster Yellows (virus) was seen in plantings at Grand Pre, N.S. in Sept. (K.A.H.) (C.P.D.S. 40:2. 99. 1960).

OENOTHERA - Evening Primrose

Rust (Puccinia dioicae). All plants in a mixed bed at Fredericton, N.B. were slightly infected (G.B.O.) (C.P.D.S. 40:2. 70. 1960).

PAEONIA - Peony

Blight (Botrytis paeoniae) caused sl. damage in 2 home gardens at Lethbridge, Alta. (P.E. Blakeley). Damage was sl. at Saskatoon, Sask. (R.J. Ledingham). Half the young plants, recently set out in a garden at Ottawa, Ont. were sev. affected (D.W.C.). Specimens were received from Bedford, St. Michel and Sherbrooke, Que. (D.L.). Infection at the Research Station, Fredericton, N.B. averaged 5% (G.B.O.) (C.P.D.S. 40:2. 68. 1960).

Ringspot (virus) was generally distributed in the Fredericton, N.B. area but incidence was low (G.B.O.) (C.P.D.S. 40:2. 67. 1960).

Aster Yellows (virus). Infection at Grand Pre, N.S. was 20% in Sept. (K.A.H.) (C.P.D.S. 40:2. 99. 1960).

Mosaic (virus) affected 2% of the plants in a 50-foot bed at Ottawa, Ont. (D.W.C.).

PELARGONIUM - Geranium

Basal Stem Rot (Botrytis cinerea). Infection was 10-50% in stem cuttings in propagation beds at various places in the Okanagan Valley, B.C. (G.E.W.).

Blossom Blight and Leaf Spot (Botrytis cinerea) was mod. in large beds at Hull, Que. (H.S.T.).

Black Leg (Fusarium sp.) Ten % of 300 cuttings at Charlottetown, P.E.I. developed a black stem rot (J.E.C.).

Bacterial Leaf Spot (Xanthomonas pelargoni) affected 2000 plants in a plastic greenhouse at Peterborough, Ont. The disease was aggravated by poor cultural conditions and overcrowding (R.J. Baylis).

PHLOX

Powdery Mildew (Erysiphe communis Wallr. ex Fries = E. cichoracearum DC.) was common perennial phlox in Vancouver, B.C. gardens (H.N.W.T.). Specimens with sev. infections were received from Quebec City, Charlesbourg, East Brougton and St. Ephrem, Que. (D.L.). It was quite common in the Fredericton, N.B. area in Aug. (G.B.O.) (C.P.D.S. 40:2. 69. 1960).

Leaf Spot (Septoria divaricata) occurred early on perennial phlox at Fredericton, N.B. The organism was isolated from annual phlox in Aug. Leaf symptoms were severe (G.B.O.) (C.P.D.S. 40:2. 69. 1960).

Aster Yellows (virus) was tr. on perennial phlox and 10% on annual phlox at Kentville, N.S. in Sept. (K.A.H.) (C.P.D.S. 40:2. 99. 1960).

Streak (virus). A 1% infection was seen at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 67. 1960).

SAINTPAULIA - African Violet

Root Knot (Meloidogyne incognita) was recorded at Saanichton, B.C. from plants newly imported from the U.S.A. (J.E.B.) (C.P.D.S. 40:2. 107. 1960).

SALVIA - Sage

Root Knot (Meloidogyne hapla). At Harrow, Ont., 100% infestation was seen in a home garden (W.B.M., R.M.S.).

Stem Rot (Sclerotinia sclerotiorum). Infection was 10% in a planting at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 70. 1960).

TAGETES - Marigold

Wilt and Stem Rot (Phytophthora cryptogea) was seen on marigolds in Essex Co., Ont. (A.A.H.).

Aster Yellows (virus) was tr. in a planting at Winnipeg, Man. (W.L.G.). A mod. infection developed late in the season in an Ottawa, Ont. garden (D.W.C.). It was seen at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 67. 1960), and ranged up to 100%, depending on variety, at Kentville and was 20% at Grand Pre, N.S. in Sept. (K.A.H.) (C.P.D.S. 40:2. 99. 1960).

TROPAEOLUM - Nasturtium

Aster Yellows (virus). A 10% infection was recorded at Cole Harbor, N.S. (K.A.H.) (C.P.D.S. 40:2. 99. 1960).

TULIPA - Tulip

Fire (Botrytis tulipae) damaged 30% of the tulips in a Vancouver, B.C. planting (H.N.W.T.). It was first noted 20 May on Red Emperor at Fredericton, N.B. Infection was 80% on one large bed of mixed varieties (G.B.O.) (C.P.D.S. 40:2. 69. 1960). Fire was seen, but was not troublesome in N.S. in 1960 (K.A.H.).

Gray Bulb Rot (Sclerotium tuliparum) was sev. in an Ottawa, Ont. garden in May (R.J.B.).

Break (virus) was seen occasionally in the Okanagan Valley, B.C. (G.E.W.). It was tr. in a mixed planting at Ottawa, Ont. (D.W.C.).

VERONICA - Speedwell

Downy Mildew (Peronospora grisea). Several plants were infected in the Fredericton, N.B. area (G.B.O.) (C.P.D.S. 40:2. 68. 1960). This constitutes a new record to the Survey (D.W.C.).

Powdery Mildew (Sphaerotheca macularis Wallr. ex Fries) W.B. Cke. = S. humuli (DC.) Burr.) was mod. on several plants at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2.68.1960).

VIOLA - Pansy

Gray Mold (Botrytis cinerea). Pansies in a border at Fredericton, N.B. were 20% infected (G.B.O.) (C.P.D.S. 40:2. 68. 1960).

Crown Rot and Leaf Spot (Centrospora acerina) was again extremely sev. in a bed of several thousand plants at Centerville, N.S. so much so, in fact, that the grower has given up this crop. Fungicidal sprays in the fall of 1959 appeared to have held the disease but it spread rapidly in the cool, wet spring of 1960. A second grower at Cambridge reported the disease in a large bed planted in 1959 (K.A.H.).

Leaf Spot (Cercospora violae). Infection was about 1% in a planting of several thousand plants at Centerville, N.S. (K.A.H.).

Powdery Mildew (Sphaerotheca macularis Wallr. ex Fries = S. humuli (DC.) Burr.) was general at Summerland, B.C. late in the season (G.E.W.).

ZINNIA

Blight (Alternaria zinniae) was sev. on most plants in a garden at Madoc, and was prevalent in gardens at Ottawa, Ont. (H.S.T.). It caused some damage in home gardens at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 69. 1960). At Kentville, N.S. there appeared to be varietal differences in resistance to blight (K.A.H.).

Powdery Mildew (Erysiphe communis Wallr. ex Fries = E. cichoracearum DC.) was mod. at Brookfield in July (D.W.C.) and was very sev. at Kentville, N.S. in the fall (K.A.H.).

Root Knot (Meloidogyne hapla) affected 100% of the plants in a Harrow, Ont. garden (W.B.M., R.M.S.).

Wilt and Stem Rot (Phytophthora cryptogea) was observed at Harrow, Ont. (A.A.H.).

Sclerotinia Rot (S. sclerotiorum) affected 20 out of several hundred plants at the Research Station, Kentville, N.S. (K.A.H.).

Aster Yellows (virus) was seen at Fredericton, N.B. (G.B.O.) (C.P.D.S. 40:2. 67. 1960), and was tr. at Grand Pre, N.S. in Sept. (K.A.H.) (C.P.D.S. 40:2. 99. 1960).

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